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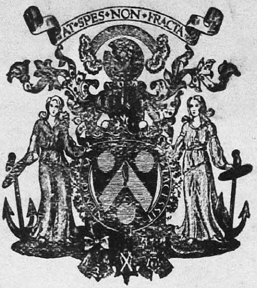

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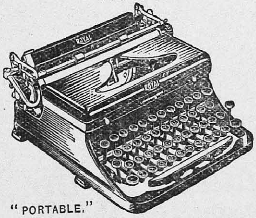

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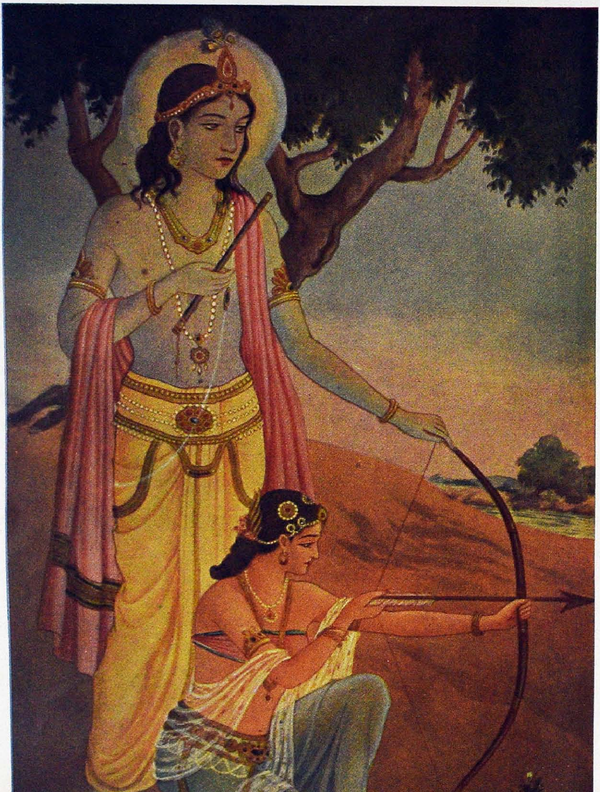

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TO OUR READERS

IN issuing this Annual Number of *The Scholar* which marks the completion of twelve years of existence and the beginning of a new year, we beg to send our greetings and express our sense of gratitude to our readers, contributors, well-wishers, advertisers and all those who have helped to make the journal the success that it is. We hope they will continue their patronage in the years to come and pray that we may deserve it.

The year that is drawing to its close will go down to posterity as a memorable one, because it has seen the fruition of our aspirations, incomplete and partial though it might be. From a party of opposition the Congress has become the party in power, and in the majority of provinces in India, though we are far from having full Swaraj, we have the beginnings of a new government, which may be said to be a people's government. Even with the limited powers allotted to them under the new Constitution, they have been able to clearly demonstrate the essential and vital difference between a people's government and an alien bureaucracy. And it is a matter of pride for us, that of the seven provinces in which Congress Ministries function, the Madras Ministry has covered itself with a glory all its own by the remarkable courage and expedition with which it has translated the dream of Prohibition into a reality and an accomplished fact. Though belated, we respectfully take this opportunity to wish the Ministers all good luck and a tenure of office long enough to enable them to complete their comprehensive schemes for the well-being of the people.

All kinds of reforms are under discussion and some are already under operation. Of these the most important item of discussion relates to education. The Annual, which we are presenting to our readers, therefore, contains a number of articles bearing on this all-important subject with discussion on topical matters like the introduction of Hindi in schools, which we would particularly recommend to our readers, as also the constructive suggestions of Mr. Duncan Greenlees. Dietetic reform is another vital topic, which is exercising the minds of the best among us and on which useful knowledge is daily accumulating. We have no doubt that the scientific articles written by people, who have the best claim to write on the subjects they deal with, will be read with profit, written as they have been in a way which any lay man could understand. The increasing interest taken by our women in public affairs is well reflected in the articles contributed by well-known lady contributors.

We take this opportunity also to tender our warm and sincere congratulations to Prof. Nicholas de Roerich on the completion (on October 10) of the fiftieth anniversary of his artistic, literary, and scientific activities and of the fortieth anniversary of his Academicianship of the Imperial Academy of Fine Arts, Russia. Our readers should be familiar with his name and works, for he is, indeed, one of the most dependable and selfless patrons of *The Scholar*, as he is of all good causes, and his articles, which is a regular feature of the magazine, and his artistic works, reproduced from time to time in these pages should have given them an idea of his comprehensive genius. Nor could they be ignorant of his great mission to secure peace through culture, and of his Banner of Peace for the protection of all monuments of culture about which several articles and pictures have appeared in these pages. To us in India it should be a matter of pride and gratification that this great Russian artist and philosopher should have made his home in India —in the sacred Himalayas. A brief resume of his activities giving a vivid idea of his varied activities and contribution to the cause of culture and humanity is published on page 156.

Harem

Now that I have a while to spare,
And rhymes are dancing round my head,
Strange, for a theme, I do not care
If France go blue, or Spain go red;

And count of little consequence
What Gandhi says, or does not say,
Or Wilhelm's lost omnipotence,
Or the Dictators' ruthless way.

For all these things will gorge the heap
Time will into oblivion shove.
Only one theme its place will keep,
The old, but garbled, theme of love.

No! not the sentimental whine
With which the crooner smears the air,
Making of song a concubine,
And life a sly philanderer.

Oh! what has he of love to tell?
And what have they to tell of love
Who kneel not in its chasuble,
Nor in its holy ritual move?

Oh! I could croon, nor be believed,
Of love that makes their passion pale:
For I have loved, and love received
From women, in the heart's entail,

Not one by cancelled one, but six,
And all at once, and all the time:
Each my whole heart's imperatrix
In the precession of a chime:

Each over-toned and under-toned
By all the rest; so that no more
The heart of varied rapture owned
At thirty than at sixtyfour.

These will suffice as theme for song,
Now that I have a while to spare,
And for the kinks of right and wrong
Less than a withered rose-leaf care.

One is a whetstone making keen
The sickle of the reaping mind :
And one life's highways brushes clean
With music's paradisal wind.

One the dull air divinely shakes
With the soft stir of spirit-wings :
And one into her being takes,
And gives, the joy of natural things.

One can the veins to valour start
With chivalry for wrong's redress :
And one can pacify the heart
With love's all-saying silentness.

Day brings no ennui while the sun
From solstice unto solstice swings;
Nor night, while stellar athletes run
Around the planetary rings.

And while these women bake my bread,
Small chance has love of going stale,
Or a spent heart to blur the head
With shreddings of illusion's veil.

Yet, though each silently resolves
A seeming separate intent,
Each the soul-sisterhood involves,
Subtly the same, though different.

Each in her own unique dear way
Looks through the same brown-brilliant eye
As when we wed, one April day ;
And each on the one day will die,

And go where Light all shades will drown
(And may my death-day be the same !)
And God will crown them with one crown,
And call them by one flowery name.

And you who would my myth construe,
And learn love's never-ageing lore,
Wherein the old remains the new,
And spending only swells its store,

Must ponder Ireland's trampled times,
When, to elude the invader's flames,
The patriot poets warmed their rhymes
With half a dozen worshipped names—

"Daughter of Sorrow," "Little black Rose"
And others that the heart-strings thrill:
Yet the one love of loves they chose
Was Ireland, Ireland, Ireland still !

Even thus my stainless loves I hymn,
Changing, unchanged, till song be done,
Since God, in a celestial whim,
Enshrined them in the form of one !

James H. Cousins.

Friendship

(DIARY LEAVES)

BY NICHOLAS ROERICH

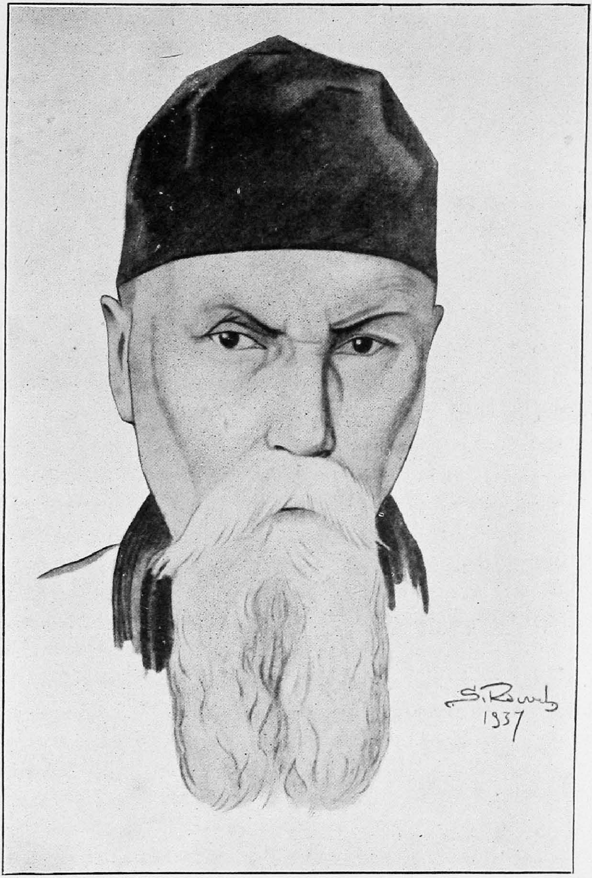
FRIENDSHIP—what an amiable and hearty word! In it is mutual understanding, and mutual respect and co-operation. This means that precisely in the word friendship is contained that which is of the utmost requisiteness. There can be no friendship if people, coming together in it, do not know what such mutual assistance is and so not understand what self-perfectionment is.

Self-perfectionment is not selfishness at all. It arises first of all not for the self, for man improves himself for the service of mankind. In just this service he makes himself better, he is made more respective, more attentive, more effective in good works. But man will secure and make fast these qualities not at all for his own personal advantage but for the successful progress of humanity.

In the service of mankind friends pay off their debt to all that exists. And what a matter of rejoicing that it is like the Great Service because friendship contains first of all the advantage of one's fellow man. As the ship completes its voyage not for itself but for the passengers it carries, so does the conscious friend assuredly lead and uphold all those near him.

In friendship will undoubtedly be the heart's wish to help and sustain one another. There will be this wish amid difficulties as well as amid joys. In formal social relationships quite often each joy is met with envy and evil whisperings. But in friendship each member is able to be glad in his heart at the joy of each co-worker.

In every way the world is thinking about collaboration, about multiform co-operation. Disunity and hatred have already, as it were, overflowed all bounds. Precisely friendships are such hearths of co-operation which can grow from small private circles to national dimensions.



PROFESSOR NICHOLAS de ROERICH
by Svetoslav ROERICH

Friends are the trusty bulwark of true nationality. Friends apprehend also the natural hierarchy. Friends know that anarchy and chaos are synonyms.

Friendships are by their nature constructive. A friendship cannot be formed for the sake of destruction. In that case such an association would be called something entirely different. Friendship grows by the strength of the heart. Therefore numerical quantity has no significance, and this circumstance is enormously important for the present time when quality should be the sole measuring rod.

When co-operation is devoted to some great example manifested in life, in the history of great peoples, such a basis resounds especially vitally. In co-operation, in friendship, there can be nothing of the abstract. All must be effective, immediately applicable, and inspired. Friends inspire each other in their conversations. They find in their distant friends a relationship by which they are revived in spirit.

Friendship must be primarily a vital thing. No one compels friends to go along together. Only in strength of the heart's command, only by being attracted by a sincere desire to see and strengthen each other, do they meet and experience hours of joy. In these hours of joy is contained a great reciprocal reinforcement. There is no compulsion in friendship. All is freely given, in good-will.

My dear friends, your thoughts only confirm all that has been said. Years pass and more and more you find joy in your conversations, more closely you are drawn together and more strongly do you feel for each other. Exactly, and so it should be. And as the heart is positive and inexhaustible, so too your mutual strengthening can be endlessly joyful. Your reciprocal help in cognizing the good, your joy of meetings and desires to see one another and enrich each other in all domains, will be an endlessly flowing source.

There are wells which are menaced by each sandstorm, but there are also such sources as flow from the rocks themselves and for which the very stones prove to

be not an obstacle but a beneficent channel. The minerals themselves saturate them with salts and curative properties. Have in yourselves this salt, have in yourselves those unquenchable salutary qualities which respond precisely to the significance of friendship. When for some of you circumstances are burdensome and constrained, he knows that at any time he can go to his light-bearing friend and in the spark of meeting set aflame his own flickering fire.

A fire must be fed — you all know this. The purport of the extinguisher will always be dark and murky, but the kindling, precisely the kindling of the heart, will be the most important, the most needful. In this heart communion you get rid of everything resembling useless competition, envy, all that engenders misanthropy and treachery. You are careful to examine each other's armour, not for reprehension but for a joyful strengthening of it. And your friends approach you with a smile, for they will know in their hearts that only in goodwill you deal with them. All this is so simple and so well-known, but precisely at present is this so indeferrably needed. Precisely just now is so rarely applied in life the fundamental of the good and hence humanity suffers so much from enmity and affliction.

The more you make manifest the principles of luminous friendship, the more do you affirm joy. In this great inspiration you will grow in spirit and body. Justify the great concept of friendship in all its profound significance.

Let Friendship, Co-operation, Hearths of Good live on and multiply.

Art and Psychology

By O. C. GANGOLY

HOWEVER much philosophers and men of letters may speculate about Beauty and the essential nature of the human activity which we have agreed to call Art, the conviction is gaining ground that it is the experimental psychologists who will settle things. The investigation cannot be the monopoly of the mere psychologist, unless he is a person of trained aesthetic sensibility, or specially gifted in this way, that is to say, unless his reactions to works of art are keen, alert and sound. It will be remembered that the lady in the story who said, "I don't know anything about art, but I know what I like" received the answer from Whistler "A quality, Madame, which we share with the lower animals" which showed clearly enough how relevant he thought the likings of untrained persons were to aesthetics. And it was this same conviction that the specifically aesthetic emotion is a distinguished spiritual activity, a feeling elevated into a value, not an indiscriminate response, that inspired John La Farge's epigram: "It is not we who judge a work of art, rather is it the work of art that judges us".

Our individual reactions to a particular work of art discloses the state of our aesthetic sensibility, the actual stage of our aesthetic development. Some of the English psychologists (e. g. Bullough, Valentine) have made elaborate classifications of persons on the basis of their degree of power to respond to and their method of apprehension of an aesthetic object. One instance of such a classification will serve to show how these psychologists are working. Mr. Bullough places lowest in aesthetic development the physiological type, that is, such persons as characterize a piece of colour or sound as soothing or jarring to the nerves. Second comes the non-fused associative type. This includes the people who like landscapes because they remember that they were once happy amid such scenes. Persons of the mind or objective type, fix their attention upon

the object and not upon their own experiences, but they are excessively critical and aloof. They judge colours as pure, or foggy, tones as full, or round. They lack intimacy of feeling and decided preference among objects. Bullough places fourth in the classification those who fuse their associations with the object. Among inhering associations are those of the blue of the sky in the colour Blue, and of the green of foliage in the colour Green. Highest of all he places the character type—those who react to colours or tones as if sense-elements and complexes had personalities. Certain people find orange mysterious or delicate; saturated red, dashing or majestic; particular tones, meek or happy, forceful, or sullen. Another distinction which seems to this psychologist significant is that between the analytic and synthetic type of mind, between those who grasp an object centrally and as a whole, and those who take it piece by piece, or aspect after aspect.

Such evaluation of the testimony of subjects is a step in the direction of criticism. It signalizes the growing recognition among psychologists that the aesthetic experience is not to be tested any how, any where, by any one. The comparative culture, or intelligence or maturity of the persons engaged in the investigation, is more or less taken into account, and the testimony of the artists themselves is occasionally drawn upon. The laboratory workers are still busy with their charts, statistics, and questionnaires. They have not yet finished their labour of collecting accurate data bearing on the mysterious phenomenon of Art, and have not yet tired of asking, "Do you find this beautiful and why?" "Do you like this and why?" "Do you find this pleasing and why?" And so on.

But the artists and connoisseurs believe that the meaning of Art, and the solution of its mysterious activity cannot be found from the artificial and formal laboratory of the scientist, but in the living laboratory of the studio, where the picture, or the sculpture, or the design for an architectural masterpiece takes its birth. A drawing at its inception, a pattern in its nascent stage, a picture in an embryo, — as it passes through divergent stages, before it

develops into a full-fledged work of Art—is more likely to reveal the mystery and the mystic character of Art, than all the statistics and charts of the experimental psychologists, laboriously attempting to discover *basic facts* or data for aesthetics. To this valiant query for basic facts the artist retorts : " the question of Art begins, where the question of *facts* ends." While all the energy of the psychologists is directed towards correlating the wayward artistic emotion with common bodily and mental habits, and towards reducing the idiosyncracies of the aesthetic temper to natural law, the connoisseurs and the artists (the two are inseparable entities—the *rasavit* and the *rasika*, as we call them in Indian aesthetics) are pressing the theory in the opposite direction, towards the esoteric, towards the perfect apprehension of elusive elements. Art is something more than an agreeable arrangement of form, harmonious patterns and the like. Most of our derivative artists gather together on their canvases the catch-words, conventions, patterns and motives, or even types and poses, borrowed or pilfered from the works of old masters, —but they fail to evoke that mysterious and magic quality— which fuse physiological and dynamic elements of Forms into a living reality of Art. That magic touch, the soul of Art is evoked in rare moments of spiritual exaltation, the secret of which, artists claim, is too elusive to be caught by the methods of laboratory experiments.

The New Orientation of Government's Frontier Policy.

By DR. NANDALAL CHATTERJI, M. A., Ph. D.,
Lecturer, University of Lucknow.

AFTER ceaseless military operations during the last few months in the tribal country, the Government have now announced the terms of settlement to the hostile tribesmen, which have been interpreted as a new orientation of their frontier policy. The ever-recurring disturbances in the frontier country since the occupation of the frontier districts in the last century have always been a reminder of the failure of the Government's inconsistent and haphazard policy in that part. The prolonged fighting in Waziristan against the Fakir of Ipi has at last convinced even the military authorities of the necessity of some modification in the policy on the North-West Frontier. Public opinion too has been in favour of a drastic change in the policy and methods followed so far without any apparent success. Thus, the announcement of a new policy at this juncture will be certainly welcomed in all quarters. The question, however, is bound to be asked by everybody interested in the frontier question as to whether the change is going to be adequate and effective at all.

The press report of the official decision outlining the Waziristan peace terms is, no doubt, too sketchy to permit of a detailed review of the proposed change in the policy, but it is sufficiently indicative of the intentions of the authorities. On an examination of these peace terms, however, it appears that no startling or radical change is foreshadowed therein. This will surely disappoint those who had been expecting a thorough readjustment of the frontier policy. The only material change, apart from the usual punitive measures, is the proposed extension of the protected area in the tribal country. The policy of establishing a protectorate over certain areas adjacent to the settled

districts is by no means new. The Khurrum Agency, the Tochi Valley, and the Wana Plain have been Protected Areas, for some time. The so-called new policy will mean the addition of a few more protected areas.

To understand the real implications of the protectorate policy it is necessary to analyse its objects and methods. The idea of a protectorate seems to have resulted from a number of considerations. Firstly, it was obviously regarded as a step preparatory to the ultimate introduction of direct administration. The tribesmen were to be slowly accustomed to some degree of control before they could be subjected peacefully to regular government. This object is in the main correct. After all, there cannot be any doubt about the fact that a sudden introduction of regular administration over a people who are most jealous of control, and who have never known regular government for centuries past is bound to provoke a universal conflagration in the tribal land. Secondly, the internal feuds between tribes and also among the members of the same tribe have frequently been the occasion for a general rising against the Government. Interested parties have always been able to exploit such feuds by fomenting disaffection against the British Government. Thus, immediate interference in the internecine feuds and disputes before they assume grave proportions and menace the safety of the settled districts is bound to promote peace and order. In other words, the Government desire to take up the role of the disinterested arbiter in their mutual quarrels, and this could be possible only if the tribes were made to agree to accept the protection of the Government. Thirdly, through a protectorate alone direct offences against the Government could be largely prevented by prompt enquiries into all grievances and causes of disaffection. This alone can prevent or neutralise hostile preaching against the Government. Fourthly, in selected parts like the protected areas it would be easier to concentrate the attention and try methods of ameliorating the condition of the people in a manner that would induce the neighbouring tribes to appreciate and seek of their own accord the blessings

of peace and tribal amity. The protected areas thus would be to the people a sort of advertisement of the good intentions of the Government. Fifthly, for adequate military defence of the frontier it is essential to open up the inaccessible country by building a net-work of roads, but the road-building programme has always been looked upon with the greatest suspicion by the people, and has been jealously resisted. But, once an area comes under British protectorate the authorities are enabled to speed up the building of roads. Lastly, in a protected area it is further easier to prevent directly and indirectly not only anti-British propaganda in general, but the increases in tribal armaments which have been the principal cause of the absence of peace and tranquillity in the border area. As immediate disarmament is neither practicable nor expedient, the idea is to check the growth of further armaments by some measure of vigilant watch and arbitration of internal disputes, which could be possible only through some kind of protectorate. Thus, the commencement of the system of the Protected Areas was due to these intelligible grounds.

The punitive measures announced by the Government are so obviously inadequate that far from curbing the lawless attitude of the tribesmen these would only serve to add to their bitterness and discontent. The Government have announced as punishment to the hostile tribes that they should surrender 2000 rifles, and pay fines amounting to Rs. 75,000. It needs no special mention that in the tribal land every body, even a little boy, possesses a rifle and knows how to use it effectively. The official spokesmen have had to admit that there are no better fighters in the world than these war-like and well-armed people. The demand of 2000 rifles is, therefore, hardly a punishment when it is known that each tribe possesses rifles many times this number. Probably, this small number of rifles has been demanded intentionally, so that there might not be great opposition. But, even if the rifles are surrendered, as they will be under pressure, there will be no disarmament worth the name. The only result will

probably be a more intensive manufacture of rifles by the tribal artisans who, in their own crude way, can produce economically arms of an extremely high standard.

Without appreciable disarmament, which must mean prolonged fighting and opposition, a punitive tax to be paid in rifles will not be a heavy burden on the people, and will only spur them on to further armament. As for the cash fine, it has never succeeded in the past, and has always defeated its cwn purpose. It is the poverty of the people which is the root cause of their lawless and predatory activities, and it is Nature which has made them poor. Under the circumstances, a fine will create the greatest discontent, and even if submitted to for the time being will create a cause for further rising. Punitive measures of various kinds have been tried in the last century and in recent years, but punishment has left a smouldering discontent which has led to fresh hostilities. Thus a vicious circle has been the result so far. A fine of Rs. 75,000, however, is ridiculously low, whereas a much higher fine could not have been paid by the people. It seems, therefore, that these trivial punitive measures have been announced merely for saving the face, rather than for effectively punishing the hostile tribesmen.

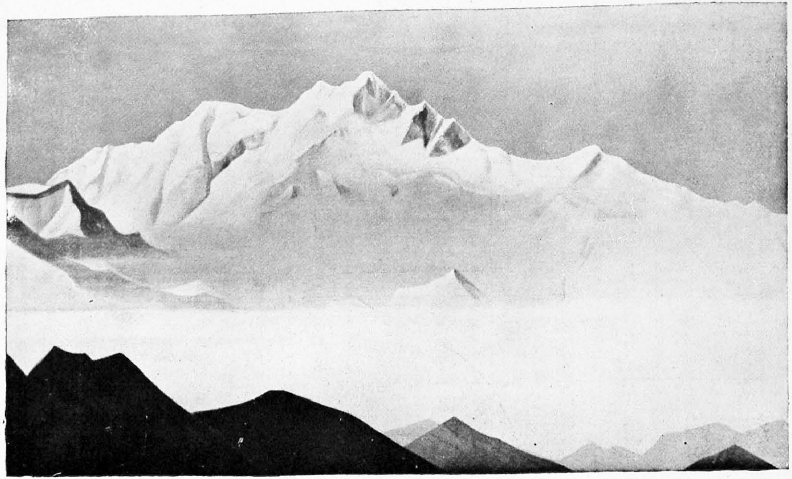
As regards the policy of extending the protected area the history of the existing Protected Areas does not hold out the prospect of much success. It has never been easy for the Political Agents to decide disputes with the help of the tribal *jirgah*. Even the influence of *jirgahs* is known to be limited. There always appear rebellious elements who are not amenable to any control of the *jirgah*. And, among the fiercely individualistic Wazirs and Mahsuds it is difficult to maintain order with the help of the *jirgah*. Even the impartial decisions of the British officials in matters which concern their *rawaz* or *shariat* will hardly be popular for long, and may aggravate the hatred for the foreigner. When offences against the Government are concerned, the Frontier Crime Regulations will be enforced. But, can it be said that this method has wholly succeeded

in the limited sphere where it has been tried so far? As for the assumption of responsibility and exercise of jurisdiction by the Government in the protected areas, it is difficult to foresee how far these will prove practicable without disarmament.

The only redeeming feature of the proposed measure is that special attention will be paid to the needs of the inhabitants of the protected areas when proposals for improvement of the country are sanctioned. This policy may to some extent lead to the economic advancement of these areas. The construction of new roads is also very desirable. The roads will not only be strategically important but will also facilitate the penetration of civilisation in a land which has been steeped in barbarism for centuries past.

It cannot be denied, however, that the new policy of the Government will prove a half-measure. The essential problem is economic, but there is no indication of any planning for the development of the country. The Fakir of Ipi is still at large in defiance of the mighty forces which have been operating at the cost of a lakh of rupees per day. Without civilisation, economic advance, and steady disarmament there cannot be lasting peace in the frontier country.

23—9—'37.



"HIMALAYAS"
By Nicholas Roerich
(Vatican, Rome).

On the Nature of Life

MODERN CONCEPTS OF LIFE AND LIFE PROCESSES

BY V. SUBRAHMANYAN, D. Sc., F. I. C.,
Department of Biochemistry, Indian Institute of Science, Bangalore.

THERE is probably, no other subject which so profoundly interests the human race as that of life. So much has been the fascination of this theme, that, almost from the earliest times, thoughtful men have devoted considerable part of their lives to the elucidation of the mysterious phenomena which are associated with life. Even to-day, the foremost scientists of the world are endeavouring to throw some light on the subject, but have not so far met with any great measure of success. The basic principle of life – whatever it is—still defies analysis!

The earlier search for the mysterious principle of life had, nevertheless, an indirect, beneficial effect on mankind. The discovery of a number of new substances for the alleviation of human suffering, the development of the fundamental sciences of biology, chemistry and a host of allied subjects—all owe their origin to the otherwise futile search for the elusive principle of life.

The living and non-living:— The scientific enquiries of the past century and, especially of the last few decades, have thrown fresh light on the nature of the phenomena that *attend* life processes. They also help to distinguish living forms from the non-living. The behaviour of living forms in natural as well as artificial environments have been studied and the scientific principles underlying their response to different conditions generally defined. Useful amount of information is also available regarding the changes attendant on senescence and death, which are now regarded as inevitable. The object of the present contribution is to draw attention to some of the more important findings and to indicate certain promising lines of future development.

One of the most characteristic things about living forms is that they are *organised*. They are made of single

or multiple cells and possess certain general shapes and sizes which are typical of each species. The individual cells are well-defined and possess their respective nuclei (the seats of life) and protoplasm (the medium of activity). The cells need or need not have coverings (membranes) around them: indeed, some of the lower forms of life are known to exist without any membrane.

In the case of the very lowest forms, the nucleus is not visible even under a high-powered microscope. Such organisms are said to possess diffuse nuclei and are not easily distinguishable from many non-living forms, which are colloidal in nature. They possess, on the other hand, the capacity for reproduction which the non-living colloids do not possess. The reproduction takes place under well-defined conditions, which are characteristic of each species. Sex phenomena are not, however, so vital as they were once believed to be; modern scientific work has, indeed, shown that even non-fertile eggs, at any rate, from some of the lower forms, can be hatched by suitable chemical treatment.

A further characteristic of living forms is that they ordinarily obey the laws of heredity. The off-springs share the features or properties originally possessed by the parents and do so in a manner which can be mathematically predicted. The possible variations are, however, so many, that, especially in the case of the higher forms, it may not be possible to forecast all the features. Moreover, only some of the inherited qualities may be obvious (dominant), while great many others may remain hidden (recessive). In the case of the very lowest forms such as bacteria, many of the attributes of the individual cells cannot be easily defined, so that it is difficult to state as to how far the laws of heredity apply in such cases.

The growth of living forms, as also their eventual decline, follow a characteristic course which may be regarded as typical. In the early stages, growth is fast and progressive. Previous growth helps subsequent development, so that there is continuous increase (the rate depending on individual and environment) until a certain stage is reached

after which there is no further growth. The system then remains in an "equilibrium" condition in which growth and decline proceed at almost equal rates. This is soon followed by the decadent stage, when there is steady loss of the various attributes gained during the growing period. Finally comes a stage when all essential processes fail and death follows. The characteristic mode of early rise and subsequent decline is true of all forms of life and give one the fatalistic concept that death is inevitable and that, while it may be possible to alter the rate by environmental factors, the ultimate end cannot be avoided.

Living forms have a remarkable capacity for adaptation to environment. Varying conditions of temperature, climate, nutrition and such like affect the mode of living and thus render the organisms more fitted to live in the environment in which they may be placed. Non-living forms are also affected by environment, but they do not quite adapt themselves to it. The struggle for existence and the capacity for living under even adverse conditions is generally characteristic of living forms.

The essential requirement of all forms of life is nutrition. Most organisms require elaborated organic substances prepared either by themselves or by other forms of life. Some of the lower forms can sustain themselves on what is, apparently, exclusively mineral matter. While a part of the nutrients may be stored as reserve material, it is essential that, in every case, a part of the food material has to be transformed in such a manner as to release some free heat energy in the medium. A further feature of this transformation is that it is ordinarily accompanied by intake of oxygen either from the atmosphere or from chemical substances which can part with their oxygen.

Each organism forms physiological products which are characteristic of its species. These products are generally well defined chemical substances, so that it should be ordinarily possible to identify the origin by a careful assay of the physiological products. Such a process is not usually necessary in the case of the higher forms, which have other obvious and characteristic features, but the chemical assay

becomes invaluable in determining the identity of the lower forms of life. Many of the commoner bacteria and moulds resemble each other in appearance and in general external behaviour, but form widely different physiological products. The digestive ferments and other secretions of these organisms are also varied, so that, by combining these tests, one can describe the original form of life from which they are derived with a reasonable measure of success.

Some of the foregoing characteristics may be shown by purely chemical substances, as also by dead cells, but all of them are not exhibited by any known form of non-living matter. It would thus be seen that living forms, as we understand them, are fairly well-defined and come under a separate category from non-living matter.

It was once believed—even by a large section of scientists—that living forms may be derived from the non-living. Some also believed that the so-called life activity is a purely chemical process. The classical researches of Pasteur and other savants have conclusively shown the fallacy of such theories and have fully established the concept of biogenesis (life from the living), which is the basis of modern biology and allied sciences. Recent scientific research has improved on this concept and has shown that, given the foundation of life, the various related processes can be explained in terms of physics and chemistry. The living cell behaves like any complex colloidal system and obeys the commoner physicochemical laws relating to such systems. Many of the phenomena relating to growth, movement, general behaviour, response to environment, ageing and death of the living forms can thus be successfully explained.

Scientific data are available for the average life-range of many of the commoner species so that, barring accidents, it should be possible to roughly forecast the stage when the vigour of life would diminish and senescence would begin. The exact age at which senescence begins in the case of a particular individual would depend, to a large extent, on heredity, environment and such other factors but these do not alter the inevitable course of life. The rate of ageing

can be modified but senescence cannot be entirely prevented.

With advancing age, the contents of the living cells undergo marked change. The translucence which characterises the young and growing cell steadily disappears. The cell contents originally present in finely divided form, tend to aggregate and settle as granules. The protoplasmic fluid diminishes in quantity and the nucleus shrinks in size. These changes are probably reversible but science has not yet succeeded in achieving this end.

Concurrently with these changes, the ability for reproduction steadily diminishes and is finally lost. The capacity for adaptation to environment is also weakened. The intake of nutrients is steadily reduced and the attendant physiological transformations considerably slackened. Disruptive forces start within the cell itself and there is an increasing tendency for the cell constituents to disintegrate and be transformed into simpler substances. Eventually, life activity comes to a stop, thus marking the death of the cell. The destruction of the cellular matter then proceeds rapidly. The organic substances originally present in the cell are taken up by other living forms or converted into a variety of simpler products, while the mineral matter is mostly left behind.

Death in the higher forms is more complicated than the one described above. Even after the death of the main organism, the body cells continue to function for some time. They are however, soon weakened by starvation, hampered by accumulation of poisonous products and asphyxiated through want of adequate air supply. In the meantime, the putrefactive organisms, which remain fairly suppressed during the life time of the main organism, grow apace and begin acting on dead tissues. The fermentation processes thus set up soon become offensive, so that it becomes necessary to finally destroy or otherwise dispose of the body as soon as possible.

Is death inevitable? Apart from the fact, the common experience, there is ample scientific evidence to show that life as lived in the usual manner is bound to lead to

senescence and death. Early growth and subsequent decline follow a simple mathematical course, the rate of which can be somewhat modified, but the end of which is, nevertheless, inevitable.

Weisman (1881) was, perhaps, the first to offer a biological explanation for death. He postulated that death has arisen through a process of natural selection and is an adaptation which is advantageous to the race. His theory, which was once held in great favour cannot, however, be substantiated and has now very few adherents. Metchnikoff propounded a theory that death in man and higher animals is due to production of poisonous substances by the putrefactive bacteria present in the intestines. His postulate is, however, only partly true, for while accumulation of putrefactive matter in the system shortens life, it does not entirely account for death. Moreover, it has been experimentally demonstrated that even under aseptic conditions life cannot be prolonged indefinitely.

Modern research has shown that given the correct nutrients and favourable environment the unicellular organisms are capable of almost indefinite existence. In some cases they can be preserved in a state of rest while in others they can be maintained in an active condition by judicious change of medium. In the latter case, it is not clear whether the same cell remains alive and active throughout the period. In any case, environmental restrictions are so considerable that preservation of the same cell in a state of continuous activity would be wellnigh possible.

In the case of the higher organism, such as animals, the body cells are capable of independent existence. They can be preserved and propagated in synthetic media and can remain active for, at any rate, a much longer period than the main organisms from which they are derived. If similar favourable conditions can be artificially maintained within the system, the body cells can then continue to live and function, even after the parental organism is dead. An extension of this observation will show that even after an animal dies, its body can be kept alive.

In actual practice, however, such a condition is not likely to be realized as the living organism and its body are closely inter-linked, so that when the body functions, the parental organism also lives. What is needed, therefore, to preserve life is a condition within the main system, which will maintain the growth and activity of the body cells. In the case of the animals, for instance, the composition of the blood should be so maintained that it provides the correct nutrients to the body cells. The correct physico-chemical balance should be preserved and the foreign matter entering the system is removed as quickly as possible. The action of the vital organisms, such as heart and lungs, should be carefully watched and whenever necessary, corrected by suitable treatment. Attempts are in fact, being made to replace, or, at any rate, supplement some of the organisms by mechanical contrivance (eg., the Carel-Lindbergh artificial heart) and any success in this direction will go a long way towards prolonging life, if not quite maintain it indefinitely.

It would thus be seen that life, though normally transient, is yet not so fugitive as we have so far believed. It may take several decades, perhaps even centuries, before the life of the body cells can be successfully controlled, but the available evidence is sufficient to show that death is not so inevitable as it seems ; that, barring accidents, life and activity can be maintained over a far longer period than has hitherto seemed possible.

Our Present Knowledge of the Vitamins.

BY DR. A. SREENIVASAN, M. A., D. Sc., A. I. C.

EVER since the scientific study of animal and human nutrition began towards the middle of the last century, it has been recognized that the prime necessities for the efficient construction and maintenance of the fabric of the body and for the regulation of its processes are three proximate foodstuffs, proteins, fats and carbohydrates, together with certain inorganic nutrients. Among the minerals, relatively large amounts of some are required for what may be called structural purposes (calcium and phosphates, for instance, for bone formation), while of others, though they are indispensable, very minute amounts only are needed; they are concerned with the stimulation of the active processes in the tissue. In addition to these, the economy of the animal body calls for the activities of certain internal secretions called hormones. They are known to be very numerous, each one being specific, with its own indispensable functions; remarkably enough, extremely small amounts of these are sufficient for the fufilment of their functions. To-day, the exact chemical nature of several of these hormones are fairly accurately known.

Scarcely some twenty-five years ago came the realisation that there are certain other factors, now known under the general name of *vitamins*, which are absolutely necessary for the normal activity of tissue cells. They have functions, apparently similar in many respects to those of the hormones, and are also usually sufficient in extraordinarily small amounts. Indeed, they are sometimes viewed as "exogenous hormones". Unlike the hormones however, they are not produced in the body itself and must, therefore, be supplied from without together with the food. These *accessory food constituents* yield no appreciable supply of energy, nor do they serve, in any ordinary sense, as

structural materials. So vital has been their role in the progression of nutritional processes that the activity of research upon the nature, distribution and functions of vitamins has to-day become very intense.

The discovery that substances of the kind are necessary came as a result of discriminative feeding experiments on animals together with gradual accumulated evidence from the study of certain so-called *deficiency diseases* displayed in human communities. Then followed the realisation of their multiplicity and our growing knowledge of their nature and functions. The traditional custom has been to label each vitamin with a letter of the alphabet. This has proved convenient enough in the past, but will probably not long survive, now that our knowledge of their actual chemical nature is fast growing.

Early in the history of these substances, it was recognized that a factor, first observed in loose association with animal fats, is essential for the growth and development of the young and that its absence resulted in certain unmistakable pathological symptoms. We now know that these are due to structural changes in the epithelial cells which line the exposed surfaces of the body. *Vitamin A* is one of the most important of the food essentials concerned in the efficiency of the function of reproduction and the rearing of the young; hence the importance of its adequate supply to pregnant and nursing women. Among notable effects of any deficiency of this vitamin to the human body are a general lowering of resistance against infection and the serious eye-trouble now known as Xerophthalmia. The condition known as night-blindness may follow from a lack of it, it being necessary for the formation of the visual purple in the retina.

Recent studies have established the fact that vitamin A is chemically closely related to a group of vegetable pigments known as the *carotenes*, and that when these pigments (*lipochromes*) are contained in the food, although they themselves have no specific influence on nutrition, they are converted by the agency of the liver into vitamin

A. Apart from its chemical interest, this circumstance has great practical importance, since green vegetables contain carotenes. Indirectly, therefore, they form an economical source of this necessary nutrient.

Vitamin A is among the vitamins which chemical skill has recently isolated in a pure condition, and its actual constitution is now known. Unlike certain others which are crystalline substances it is, when pure, a yellow oil highly potent in its action even in minute doses.

Rich sources of A or of its *precursor* (*carotene*) are: animal fats, cod-liver-oil, milk, butter, liver, eggs, herrings, carrots and fresh green vegetables. In foods, the vitamin is usually stable to heat under ordinary conditions due to the presence of antioxidants. In purer form, as in concentrates and as carotene, it is remarkably unstable to oxidation. Like C it is apt to lose biological potency on storage.

In the early days of vitamin research, one of them with functions essential for the maintenance of neuro-muscular efficiency was recognized and labelled *B*. But preparations of which the observed activity was supposed to be due to this alone have proved to contain more than one potent vitamin and we now have to speak of the "*B-Complex*". The particular one of the group which is needed for the proper maintenance of nerve tissues is now known as *Vitamin* B_1. The recognition of its existence and the special sphere of its functions came from the proof that its absence from certain dietaries is the prime factor in the causation of *beri beri*, a disease in which nerve degenerations are a prominent feature. Within an hour or two after the administration of a dose of this vitamin to a person whose diet is low in this factor, the heart's action is markedly improved and remains so for approximately four hours, when the good effects wear off. The effect is not observed in a person whose diet contains enough of it. In animals under experimental conditions, its deficiency gives rise to marked slowing of the heart's action (*bradycardia*). This vitamin promotes the assimilation of food and the

multiplication of cells (growth). It has also an important relation to the secretion of milk, much more of it being needed during the lactation period than at other times. Its abundant provision during pregnancy is also of great importance. Its deficiency has a specific effect on the adrenal glands, the sympathetic nervous system and on the secretory activity of the stomach, the production of gastric juice being greatly impaired. Among other effects of want of this vitamin are disturbance of carbohydrate metabolism, reduction of the glycogen normally stored in the liver and the accumulation of a toxic substance (lactic acid) in certain tissues which may cause functional paralysis and convulsive seizures. The insufficient ingestion of B_1 is a common food fault, due mainly to the exclusive consumption of vitamin-poor or vitamin-less starchy foods such as polished rice. It has to be remembered in this connection that the more carbohydrates eaten, the more B_1 is required.

Much labour has been spent in the endeavour to prepare in a pure state this vitamin which has been variously called *Vitamine*, *antiberiberine*, *oridine*, *oryzanine* etc.; as *aneurin*, a white crystalline water-soluble substance, we now know its exact structural formula. Very recently, it has also been completely synthesized. Unlike the other known vitamins, it contains the element sulphur in its molecule. An interesting observation made with this vitamin is that on mild oxidation it yields a pale yellow, crystalline, blue fluorescent compound which is identical with a dyestuff *thiochrom* isolated from yeast.

Rice polishings, bran and wheat germ and whole cereals are all good sources of this vitamin as also yolk of eggs, liver, kidney, cabbage, lettuce, carrots and tomatoes. An important point is that when vegetables are cooked in water and the water thrown away, more than half this water-soluble vitamin is lost. The vitamin is also destroyed on heating for considerable lengths of time and at high alkalinity.

Animal feeding experiments with preparations supposed to contain only B_1 soon revealed that in addition to

serving all the functions attributed to this vitamin, these preparations were supplying other unsuspected needs and, therefore, had other vitamins associated in them. They contained in them what for a short time was known as *Vitamin B_2* : but the most recent researches have shown that B_2 itself consists of at least two factors. When one of these is absent from the food, growth is not normal while, in the absence of the other, an animal develops severe symptoms which resemble those of the human disease *pellagra*. The B_2 complex is concerned in maintaining the health of the skin and the integrity of the nervous system. It also appears to have some part to play in the prevention of *anaemia*. It has a relation to the fat content of the diet; the more fat ingested, the more B_2 needed. The vitamin B_2 complex appears, as does C, to have some relation to the nutrition of the joints. Recent investigations in regard to *rheumatism* indicate the need for adequate supply of both these vitamins in this condition. B_2 is known to assist in the normal functioning of the digestive tract and in maintaining its resistance to infections.

Very interesting knowledge concerning the growth factor of the B_2 complex has now come to hand. Just as vitamin A is related to one group of natural pigments, the *carotenes*, so is the growth factor of B_2 related to the *flavines*. These latter (*Lyochromes*) are yellow fluorescent pigments somewhat widely distributed in nature. In very small amounts, a flavine is present in milk. Brilliant synthetic studies have decided the structure of this *lactoflavin* and biological evidence has proved that it is the actual drowth-promoting factor of the B_2 complex. The name B_2 should probably be allotted to this substance while another (*B_6* or *G*) will go to the factor which prevents the gevelopment of the grave pellagra-like symptoms (*rat dermatitis*) in experimental animals.

The nature of other vitamins of the B_2 complex is hitherto not wholly defined in detail.

Among the sources of these vitamins are brewer's yeast, liver, kidney, muscle meat, eggs, milk and leafy

vegetables. Whole cereal grains are, in general, poor sources of B_2 though relatively rich in B_1 ; on the other hand, meat and milk, while rich in B_2, are relatively poor in B_1. White of eggs is perhaps the only known food in which B_2 occurs without B_1. B_2 is more stable to heat and alkali than B_1.

Vitamin C is now familiar as the preventative of *scurvy*. It has a specific relation to the supporting tissue, of the body. The vitamin is specially, if not exclusively concerned with maintaining the normal nutrition of the smaller blood vessels. Deficiency of C may lead to haemorrhages in various parts of the body, to sallowness and other affections of the skin, to fragility of bones, swelling of the joints, imperfections in the teeth, unhealthy gums, congestion of the bladder, changes in the bone marrow, gastro-intestinal disorder and to latent or manifest scurvy. It has also an anti-infective action, especially against tubercular ulceration of the intestines. Several recent studies seem to indicate that during *tuberculosis*, the requirement for vitamin C is increased. The importance of "saturating" tubercular patients with C is, therefore, stressed.

This vitamin has now been obtained pure in the form of a white crystalline substance of which the constitution is known, and which has been synthesized in the laboratory. Vitamin C will henceforth carry the alternative name of *Ascorbic Acid*—a potent reducing agent. The introduction of a method for estimating C by titration has greatly stimulated investigations on its distribution in natural sources and the various factors affecting the same. Much interesting work has been done upon this vitamin of late and its action on various enzyme systems. It is believed that the biological function of ascorbic acid may be due to its double functions of oxidation and reduction.

The albino rat has been known to be independent of any external source of ascorbic acid. This has been shown to be due to its ability to synthesize the vitamin in its liver. Interesting experiments have been carried out to

find out the *precursor* of vitamin C in the animal system. The sugar *mannose* has been suggested in this connection by certain Indian workers. Their findings, however, could not receive confirmation at the hands of other workers.

Rich sources of this vitamin are orange and lemon juices green chillies, sprouted pulses, gooseberry, cauliflower and other green leafy vegetables. The latter rapidly lose a great part of their combined ascorbic acid on storage. The *Vitamin* is more stable in acid than in alkaline medium; it is easily destroyed by oxidation or on heating in presence of air.

The presence of *Vitamin D* in the body is essential for the proper absorption of calcium and for maintaining its normal level in the blood. Unless it is present in adequate amount in the food of a growing child, or alternatively, is produced from an inactive *Precursor* in the body by irradiation, the condition of *rickets* becomes established. Its presence, moreover, is one of the factors necessary for normal dentition.

The essential molecular structure of this vitamin has been determined. The vitamin belongs to a class of substances known as *sterols*. *Ergosterol* on irradiation is isomerically converted into this vitamin and in this form it is known as *calciferol* and is manufactured synthetically. There have been instances of late, of the existence of other precursors (*provitamins*) to vitamin D. Indeed, the accumulated evidence seems to leave no room for doubt that at least seven forms of vitamin D exist and that the possible number of molecular configurations which may exert antirachitic effect may be very great.

The natural sources of this vitamin are relatively scanty: cod-liver-oil, halibut and other fish oils, kidney, butter and egg yolk are the chief among them. The vitamin is stable to heat, light and oxidation and does not lose its potency on standing.

In *Vitamin E* we have a substance of which the influence seems to be necessary for the normal development

and functional efficiency of the reproductive system. It has been called the *anti-starility vitamin* and its special influence has been abundantly proved in animal experiments and recent reports have suggested that it may be used in the treatment of habitual abortion in women. It is widely distributed among foodstuffs, occurring in wheat and rice germ, eggs, milk, meat, lettuce, cotton-seed oil and other materials and is remarkably stable to heat, light and mild oxidation. As *tocopherol*, an unsaturated oily alcohol, it is recently claimed to have been isolated.

The proof that yet other factors of the vitamin type are necessary for complete nutrition has been forthcoming during the last year or two. Thus, *Vitamin F* is the name given to the nutritionally essential unsaturated fatty acids (*linoleic* and *linolenic*) ; its absence has been stated to result in a failure in reproductive functions. *Vitamin K*, present in hog-liver fat and certain vegetables, is a fat-soluble dietary factor deficiency of which in chicks is characterised by haemorrhages and by anaemia. *Vitamin P*, present in red pepper and in the crystalline *flavanone* factor *citrin* of lemon juice, is said to have a marked and somewhat specific influence on the capillary system; experimental scurvy, as commonly known, is a deficiency disease caused by the combined lack of vitamins C and P.

It may be apparent from the foregoing that each vitamin has specific relations to certain structures of the body: A to epithelium and nerve; B to the gastro-intestinal tract, nervous system and skin; C to the cement substance that binds the cells of the body together; D to the bone and teeth; and E to the reproductive system. It must however be borne in mind that there may be and commonly is complexity in the causation of nutritional disorders. The function of the vitamins is not merely the prevention of specific "*deficiency diseases*", with which they are usually associated by name. Often times, one supports another in maintaining the health of the skin, the teeth, the bones, the gastro-intestinal tract or the nervous system ; and all are closely intertwined in their action with other essential constituents

of the food. Thus, for instance, although vitamin D has received much attention as contributing to the normal processes of dentition, there is recent evidence to suggest that A and C also play a part in the control of dentition; doubtless these different vitamins may influence different processes involved in the complex growth of a tooth. Again, for the normal maintenance of skin nutrition, we have heard much of the importance of the special factor in the B_2 complex, but it would seem that the influence of A is scarcely less important here. Yet again, we have, for years, attributed beriberi to the absence of B_1 alone and to judge from the original evidence on which this assumption was made, it can hardly fail to be an important factor in the etiology of that condition. But Dr. Edward Mellanby has recently called attention to the fact that the nature of the nerve degeneration in beriberi differs in detail from that shown in B_1 deficient animals and he brings evidence to suggest that a deficiency in A is also a factor of importance in the causation of clinical beriberi. Once more, although vitamin E has specific relations with the organs of generation, yet loss of fertility also follows prolonged absence of A from the food. And lastly, although it has been regarded as experimentally demonstrated that various infectious diseases, including the common cold, are attributable to a lack of vitamin A, it would yet appear that the problem of the relation between susceptibility to infections and the intake of vitamins is a very complicated one, especially because most of the known vitamins seem, to some extent at least, to have the power of preventing local infections.

It is highly desirable that the necessary supply of the different vitamins should be consumed along with the natural foods and it is, indeed, fortunate that there is an increasing availability at the present time of reliable commercial concentrates and preparations of the pure vitamins. The remarkable success that has, in very recent years, followed the attempts at elucidating the structure of the different vitamins is eloquent testimony to the resources of the organic chemist and to the impetus which organic

chemistry has gained from biology. The enormous advantage to the study of the nutritional needs which accrues from such determinations of the actual chemical nature of the vitamins will, in the not too distant future, help us to discover how and why these substances, so powerful in such minute amounts, intrude into and, like the hormones, control, each in its own way, the subtle chemical processes in living tissues. In the words of Sir F. Gowland Hopkins, that pioneering investigator in this field of the subtler nutritional needs of man and animal alike, "labour has been well spent in the analysis of nutritional needs, by demonstrating the nature and multiplicity of the individual factors concerned. Yet such is the nature of the body as a whole that we must at the same time endeavour to view nutrition from some unitary standpoint. Every factor in a dietary exercises its functions in unison with those of others, and we have yet to learn with more exactness, what should be the balance among them in an ideal dietary".

Hormones, the Chemical Messengers

BY K. GANAPATHI, M. Sc.

DARWIN spoke of man as the "glory and wonder of the universe". Whether he is a "glory of the universe" or "a beauty of the world" opinions may differ; but undoubtedly he is a wonder. In the whole of the universe, wherein life is indeed an absolute rarity, he forms the only unique species that can think, talk and perform a series of antics that baffle all the scrutiny of science. Though dwelling in the push-the-button-get-the-thing age, not all would have thought about the design and the functioning of the chemical factories within the human body which, with no managers to guide or operators to assist, coordinates different kinds of labour and work with striking precision for about sixty to seventy years with no rest, repairs or reconstruction.

In such an admirably constituted human body, there are numerous departments functioning, each of which being in charge of a particular phase of man's activities. Among these, the most admirable part is played by the "ductless or endocrine glands" which pour their secretions into the blood stream thereby exciting the various organs to activity. These secretions, called the "hormones"—a term meaning 'I excite'—serve as the chemical messengers of the human body obeying the dictates of a central authority. The most fascinating aspect of their activity is that they control the two imperfectly apprehended factors as the mentality and emotions of man, i. e. they govern the quality of the mind as developed by the individual and also the instincts which are related to these, the emotions. In other words, they decide whether you are intelligent or stupid, whether you possess the instincts of a male or a female, your temper is cheerful or melancholic, whether you are a dwarf or a giant etc. The ductless glands are, therefore, aptly called

the "destiny glands" because "these potent overlords of our bodies are the dictators of our minds and personalities".

There are several such glands known till now and the story of each of the corresponding hormones tells nothing but the glory of the triumphs of chemistry. The isolation as also the understanding of the physiological actions of these hormones, is indeed one of the most enticing chapters in the history of chemistry. Though volumes have been written in technical literature about each of them, in the following is attempted a brief sketch of the important roles of the prominent among them.

The hormone adrenaline or epinephrine, is secreted by the adrenal gland and its importance has been realised fairly early. In about 1894, Oliver and Schafer in London and also Szymonowicz in Poland demonstrated its pharmacological activity. It was isolated in a pure state in 1901 by Takamine in Japan and Aldrich in America though Abel obtained it previously as a derivative. Its structure was soon fixed up and this line of chemical research culminated in its artifical preparation in the laboratory by Stolz in Germany and Dakin in England. To-day the synthetic product is in medicinal use because the compound from the natural source is costlier--for the manufacture of one pound of adrenaline fresh beef glands from about nine thousand animals are required. Adrenaline is indispensable under normal conditions for the regulated nourishment of the tissues. It affects the blood pressure as also the sympathetic nervous system. The latter is responsible for the reactions observed in man when under emotions of anger, fright and excitement. Under the stress of emotion or urgency this gland functions and prepares the specific organs to combat by endowing them with extraordinary energy. When one is frightened by a ghastly scene, when the eyes tremble, the face becomes pale, the heart knocks against the chest walls and the arterial blood rises rapidly—all the reactions are but due to the pouring of a few milligrams of glucose into the blood stream from the carbohydrate depot of the liver by the agency of adrenaline!

Adrenaline is also used in medicine as a salt for relief from the paroxysms of asthma.

Recently from the adrenal-cortex a hormone "contin" has been isolated and this is found responsible for Addison's disease which is recognisable from the general debility, irritation of the stomach, peculiar change of the colour of the skin and feeble heart action. Knowledge about this hormone is not so complete as in the previous case.

The isolation, with its subsequent use in medicine, of the hormone "thyroxine" from the thyroid gland, is considered to be one of the triumphs of experimental therapeutics. It was first isolated by Kendal in 1915 and artificially prepared in the laboratory by Harington in 1926. In normal man the entire thyroid weighs about two-thirds of an ounce and one ton of the gland yields about eleven grams of the hormone. This hormone, besides controlling the nervous system and growth in general, also decides at what rate the carbohydrate fuel should be burnt in the body. Every one is dependent upon this hormone to keep from becoming imbeciles or "human vegetables". If the gland does not function, a state of apathetic idiocy is produced, growth is stopped and in the case of the young, deformity sets in: the individual lives at only the half the normal vital speed, being listless, mentally stupid and sluggish of memory; he fatigues easily, overweighs and is easily irritable. The overactivity of this gland is worse — it leads to a voracious appetite and the individual being unable to cope up, easily collapses. This hormone, as can be seen, governs what we mean by temperament and personality and it is of importance not only to the physiological chemist but to the social activities of man as well.

There is another hormone present in the external pair of parathyroid. The study of this hormone is not yet complete but it is known that it leads to tetany and also governs the calcium balance, in its general nature resembling vitamin D.

The dramatic and arresting discovery in 1920 of the hormone "insulin" from the pancrease by a group of

workers in Toronto and its clinical application in practical therapy, form indeed a most romantic story, perhaps without parallel in the history of physiological chemistry. The chemical study and the fixing up of the constitution of this hormone is not so easy as in the other cases because the insulin molecule is very complex. This hormone plays a vital role in adjusting the metabolism of carbohydrate and is, therefore, responsible for the maintenance of a steady percentage of free glucose in the blood of healthy animals. When it does not function properly, sugar accumulates in the blood and the obvious consequence is diabetes. In the treatment of diabetes insulin is a gift to humanity for saving so many lives. Men declining quickly and pining to death have been brought back within a few days to full working power in such rapid strides as can hardly be believed. "The story of the remarkable ability of insulin in causing the removal of sugar in blood is more wonderful than all that is told in the Arabian Nights".

We have heard of rejuvenations and inter conversions of sex only in tales or mythologies. But such things are realities in the laboratories to-day. From the secretions of the sex glands as the testes in man or the ovaries in woman, a series of hormones called the "sex hormones" have recently been isolated and have been shown to be responsible for the secondary sex instincts in males and females e. g. the growth of hair, the pitch of the voice, development of the sex organs etc. It was only in 1929 that the first sex hormone was isolated and from that time onwards the development of this subject is so very remarkable that it is classed as one of the most spectacular advances of to-day.

From about 100,000 litres of male urine, the talented chemist, Butenandt, isolated in 1931 about 50 milligrams of the crystalline male sex hormone called 'andresterone'. A series of female sex hormones have also been isolated from the urine of women, especially in times of pregnancy. The fixing up of the constitutions and their synthesis form one of the outstanding pieces of work which will be of interest only to the technical chemist, but their physiological

actions will be interesting to the general reader. These hormones are of utmost importance for the proper functioning and control of the reproductive mechanisms. The male hormone, besides controlling the functions of the sex organs, also influences the longevity and mobility of the sperm. Since the sex cycle and the functions of the sex organs in women are more complex, more than one hormone is shown to be responsible for governing such functions as the menstral cycle, the pregnancy, lactation etc. For example, the ovaries secrete a hormone, 'oestrin', which produces oestrus: complementary to this is the hormone 'progestin' of the corpus luteum, both of which govern the menstral cycle and prepare the uterus for pregnancy.

These hormones are controlled and co-ordinated by central authority from the anterior lobe of the pituitary. It sends out its orders to the various organs scattered throughout the body and so it can be said to control every cell in the human body. This organ is credited with extraordinary activities and multiplicities of functions. If this does not function properly or is surgically removed, the sex feelings in man or woman become absent and infantalism sets in. It controls the thyroid regarding growth. Its underactivity makes the individual a dwarf and overactivity, a giant. It is known to affect the lactation in women through the mammary glands and is also said to be responsible for the maternal feelings. The task of understanding the precise physiological functions of these hormones is by no means an easy one since the methods of experimentation are very difficult. Anyhow, within a few more years, we may hope to have a very precise knowledge about their functions.

After listening to the accounts given by the chemist, biologist and man of medicine about the various hormones, which being present in very small quantities play such remarkable roles, we cannot but be convinced that man is indeed a wonder among God's creations, and 'his reason and intelligence of the angels' he has fully displayed by revealing the secrets of such formidable things as the hormones.

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Agriculture and its Main Problem in India

BY S. C. PILLAI, B. A.

FROM the small beginning of a vague enquiry into the relations of climates, soils, plants and animals in the remote past, the ancient art of agriculture has steadily developed into the soil science of to-day and the basic industry of the civilised world. Only some hundred years ago, it was thought that the resources of science could be brought to bear upon agriculture as well with great results and that the empirical or traditional methods could be safely given up. Thus the application of chemistry to soils and the introduction of scientific methods for the cultivation of land attempted towards the middle of last century formed the foundations of modern agricultural science. The later years have witnessed the establishment of several research stations and other agricultural institutions all over the world, particularly in Europe and America. And what these institutions have contributed to soil management and improvement of agriculture, and ultimately to the welfare of humanity can hardly be overestimated.

Although a great deal of careful work has been done, much progress has not been made in introducing improved and at the same time cheap manurial treatment into general agricultural practice and also in the most economic use of fertilisers. This aspect of agriculture has, of late, come into particular prominence with the increase of populations. The fact remains however, that soil must continue to produce the necessary food for feeding the ever-increasing populations of the world. Increased production and, at the same time, maintenance of soil fertility are the two aspects of this important question which every agriculturist has to deal with. It is highly necessary, therefore, that an effective source of the fertilizing ingredients has to be discovered before long, lest the dark shadow of famine should fall.

Of course, increasing attention has been devoted to this vital problem; and an international gathering of the scientific workers has also been frequently called for, for the purpose of discussing methods to be employed in the study of problems of soil conservation and land utilisation. It has to be observed, however, that in no country of the world are these problems of more importance requiring a more speedy solution than they are in India. Over vast tracts of this country, agriculture is the common interest and, more than ninety per cent of its immense population are entirely dependent on the produce of the land.

The present status of Indian Agriculture is one which demands a broad and deep attention. One of the most ancient of agricultural countries of the world, India has had to use up practically all her resources with the inevitable result that the pressure of her present population on her food supply has become acute, necessitating thereby an immediate consideration of means for conserving the fertility of the soil and at the same time increasing the yield per acre.

Ever since the Famine Commission of 1880 emphasised this crying necessity, the Government of India have been showing great interest in the scientific study of agriculture and pursuing a forward policy in matters of agricultural research and improvement. Although much scientific progress has not been made all these years, a great deal of valuable information has been accumulated as the result of the enquiries of the agricultural departments in different parts of the country and of those made by the several Commissions appointed from time to time. But the manurial problems of this vast country, by far the most important in regard to intensive cultivation awaited clearer definition. The Royal Commission of 1928, on examination of agriculture and rural economy in India, have more clearly pointed out the urgent needs of the soils. Nitrogen, organic matter and phosphoric acid are the most important aspects of the manurial problem the Indian farmer has to immediately consider; of which, the nitrogen demand is, by far, the greatest.

The influence of nitrogenous manure on crop production is a well recognised fact in any system of agriculture. Experiments extending over sixty years carried out at Rothamsted have more clearly demonstrated that application of 129 lbs. of nitrogen per acre to unmanured land increases the yield by nearly 200 per cent. Most of the Indian soils, as has been stated above, are deficient in nitrogen and the problem of supplying this to the soil is of greatest importance in increasing the soil productivity. More recently, various methods have been suggested for solving this problem.

It has been argued that the farmyard manure produced in the country can be used to supply the needs. Much of the farmyard manure available in the country, at present, is burnt as fuel. This practice cannot be stopped with advantage, so long as there is no other substitute for fuel; for, there is always a great need for a cheap supply of firewood over a large part of the country.

In view of the high nitrogen content of oil seeds and cakes, an import duty, and even complete prohibition of the export of these materials has been advocated as a solution of the problem of nitrogen supply to soils. The agricultural advantage of crushing the various oil seeds in India has also been suggested; but, on closer examination, the difficulties in this direction, both technical and economic, are too numerous. Even if the whole quantity of oil seeds produced in the country were utilised for the purpose the nitrogen thus made available would not be more than 100 million pounds i. e., about 1 per cent. of the total need. Further, such a stoppage of export will only interfere with the balance of trade to the detriment of the country.

Ammonium sulphate, nitrate, cyanamide and a host of other artificials put on the market can be used for the supply of the necessary nitrogen. These might serve the purpose; but, an extended application of these will not be possible by reason of their transport difficulties in the country and the ryots' want of money to purchase them. It

is always to be borne in mind that India is a poor country and under the existing conditions the farmer cannot go in for such costly fertilisers. Furthermore, the age-long experience of the Indian cultivator—which has been borne out by the modern scientific practice of agriculture also—has taught him that the nitrogen to be supplied to the soil should preferably be in organic combination. The limited purchasing power of the ryot coupled with the inferiority of the inorganic artificials, therefore, does not permit of an extended use of these in India.

Fortunately for us, in this part of the Tropics, biological fixation of nitrogen in the soil is very pronounced. Remarkably enough, certain microorganisms present in the soil have the unique ability of fixing nitrogen from the air, thus rendering the vast store of atmospheric nitrogen available for plant nutrition. The nitrogen thus fixed by the soil bacteria being in organic combination would be much more valuable. The solution of the nitrogen problem may, therefore, be sought in the study of the mechanism of these natural processes so as to make the best use of them. The cellulosic materials which are now running into waste (waste vegetation, town waste and by-products of industries in the country), after suitable treatment, can be profitably utilised in supplying the necessary energy source for the nitrogen fixing organisms in the soil. Scientific researches in this direction will, indeed, yield very useful results which will be of the greatest value to the solution of the nitrogen problem. Further such a procedure would supply a useful amount of organic matter which has also been observed to be one of the serious deficiencies of the Indian soils.

Much, as has been pointed out, as is the need for nitrogen, as a generality of the Indian soils, in many tracts of the country the deficiency of phosphorus has been the limiting factor in crop production. It is not necessary here to insist on the manurial importance of phosphoric acid as it is abundantly clear from the fact that one of the most important lines of Fertiliser Industry in the world centres round the solubilisation of Bone and Rock phosphate. The

practice has been to convert these materials into superphosphate which is perhaps the most popular and the most extensively used phosphatic fertiliser in the world. Superphosphate is prepared by treating Bone and Rock phosphate with sulphuric acid. The resulting acid phosphate is soluble and hence readily available to plant nutrition.

Superphosphate of commerce always contains some free sulphuric acid, though, in recent years, the percentage of acid has been slowly diminishing. The acid is nevertheless considered harmful to plants. A further defect in the use of sulphuric acid lies in the fact that rock phosphates, which generally contain calcium carbonate are not fully attacked by the acid. Besides, economic considerations do not permit of the manufacture of superphosphate in our country on the above lines.

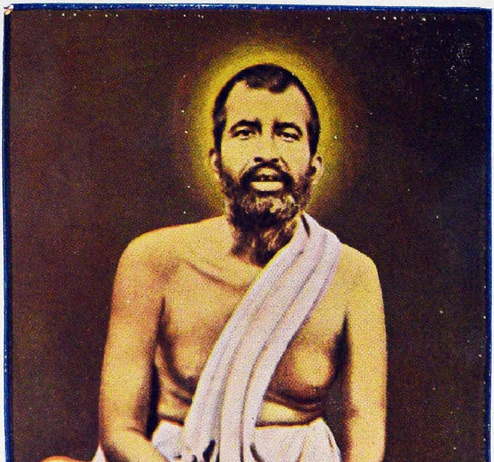
India is entirely dependent on Japan and Europe for her supply of sulphur which is chiefly used in the manufacture of sulphuric acid. India's resource of pyrites is also small. Owing largely to this circumstance the cost of manufacture of sulphuric acid is greatly increased. Moreover, the cost of land transport in India is so considerable that it would not pay to manufacture superphosphate under normal conditions.

Although there is an adequate and cheap supply of the phosphate raw material in the country in the form of bone and rock phosphates (an annual production of about 30,000 tons of bone which is exported and the presence of large tracts of phosphate rock in the Trichinopoly District and south Bihar), these cannot be directly used as fertiliser with advantage. The solution of the phosphorus problem lies therefore in finding out other cheap methods of treatment of those materials so as to render them a fully available phosphatic fertiliser. Under the existing conditions, it may be considered that the large quantities of organic acids produced during fermentation of waste products like molasses could be profitably used in the manufacture of a readily available phosphatic fertiliser from the raw materials. The insoluble phosphates in these raw materials

(Bone and Rock phosphate), if present in the medium in which these organic acids are formed, would naturally be rendered soluble. In addition, the medium will also contain useful quantities of organic acid salts which will greatly facilitate biological fixation of nitrogen from the atmosphere, as has been shown by the recent scientific studies on nitrogen fixation in the soil. The above procedure would result in the production of a mixed fertiliser which will be useful in the supply of both nitrogen and phosphorus to the soil. Furthermore, the associated organic matter present in such a type of fertiliser would greatly add to the manurial value of the final product.

Quite recently, the problem of the disposal of several waste materials like molasses has become the most serious concern of the industrialists in the country. Various methods of utilising these have been suggested. In a pre-eminently agricultural country like India, perhaps the best way of disposing these by-products would be to utilise them as fertiliser—to treat them in the manner suggested above as to increase the supply of nitrogen, organic matter and phosphorus to the soil.

It is suggested, therefore, that the manurial problems of Indian Agriculture may be considered on the lines broadly indicated above. It will also be useful to consider the possibility of developing a fertiliser industry based on those principles with a view to meeting the vital needs of the Indian soils in conformity with the poor conditions of the Indian farmer.



THE SERAPHIC MASTER

"The Seraphic Master had spent his whole life at the feet of the Divine Beloved, the Mother—the Living God. He had been dedicated to her from infancy; before he had attained self-consciousness he had the consciousness that he loved Her. And although, in order to rejoin Her, he had been condemned to years of torment, that was only after the manner of a knight-errant, the sole object of whose trials was to make him worthy of his chaste and religious love. She alone was at the end of all the interlacing paths in the forest. She alone, the multiple God, among the thousands of faces. And when he had reached Her, he found that he had learned to recognize all those other faces and to love them in Her, so that with Her he embraced the whole world. The rest of his life had been spent in the serene fullness of this cosmic Joy, whose revelation Beethoven and Schiller have sung for the West. But he had realised it more fully than our tragic heroes. Joy appeared to Beethoven only as a gleam of blue through the chaos of conflicting clouds, while the Paramahamsa—the Indian Swan—rested his great white wings on the sapphire lake of eternity beyond the veil of tumultuous days."

—Romain Rolland.

An Inside Story of China

BY G. VENKATACHALAM

I met Miss Agnes Smedley, the Communist author and friend of China, more by accident than by design. I was glancing through the pages of one of her new books on Red China in a big American Book Stores in Shanghai, when the smart Yankee girl attending on me surprised me with her disarming friendliness.

"Are you interested in such books?", she asked. "Yes", I replied, in a non-committal way.

One had to be careful in China, at any rate, in Republican China, about communist literature.

"Do you know the author?", she continued. "I've read some of her writings and know a little about her from friends in India", I said.

"Would you like to meet her?", she tempted me, and before I could say "I should love to", she rushed to her table and started talking on the phone.

"Miss Smedley would like to speak to you", she shouted across the room inviting me to the phone.

It was a suspicious voice I first heard over the wire. Who was I? What was my name? And why was I in China?—these and a few more impertinent questions were hurled at me. I lost all enthusiasm for meeting her and was nearly ringing her off when I heard a changed tone and an invitation to lunch or tea that same day.

I accepted the "tea" and drove to her residence in the French Concession. I noticed she was well guarded and only after a careful scrutiny and examination, first through a peep-hole and later openly, I was led to her rooms upstairs by a stern silent solemn-looking Chinaman. It all seemed a mystery and I was getting slightly nervous.

The sitting-room was cosy, modern in its fittings but distinctly Chinese in atmosphere. The shelves and teapoys

were filled with books, mostly the yellow wrapper publications of the Gollancz's. There were a few autographed photographs and one or two exquisite Ming porcelain pieces.

From behind the curtains stepped out a pale, worn-out but nevertheless alert figure, simply but effectively dressed, with a refined intellectual face and cultured grace, and greeted me warmly with a strong masculine grip. That's how I met Miss Agnes Smedley. She had just then returned from America via Russia and was full of praises for the Soviet Theatre. She was first and foremost an artist and not a politician. Intolerable economic and social conditions of a mad world made her a rebel.

A remarkable woman in many ways, Miss Smedley had an adventurous career in the cause of art and freedom. American born, university trained, cosmopolitan by nature, she led a Bohemian life in her younger days and contacted the intellectuals of the East who visited the States in search of learning. She was a friend of the Indian students in America, Germany and Russia. Mr. Virendranath Chattopadhyaya, brother of Mrs. Sarojini Naidu, was a great comrade of hers in her revolutionary career.

A regular contributor to Indian periodicals, she kept herself in touch with Indian affairs, and her writings in the *Modern Review* on Russia and China were greatly appreciated by Indian students. She was fearless in her criticisms, and her anti-imperialistic views brought on her head the wrath of the British and Japanese Governments, and her communistic activities, the fury and vengeance of the Nanking Central Government. A price was put on her head and her books were prohibited within the Chinese territories. Hunted from pillar to post, she became a world-wanderer, and Communism in China found in her a valuable ally.

"China will have to fight Japan. That is inevitable", she said with the fervour and fanaticism of a nationalist. "But not as yet", she mused with a sigh, "China is a house divided against itself, and there is no leadership. Chiang

Kai-Shek is an opportunist, a dictator and his fall must first come before China can do anything. The intellectuals are not with him or his Government; the peasants are his pet aversion and he hasn't done anything for them; the youth resent his regime; and more than half China do not follow him".

It all seemed a trifle exaggerated to me. I understood her passion for communism, and much as I admired communism and its practical achievements in Soviet Russia, I did not share her enthusiasm. The weakness of Marxism is this blind glorification of the proletariat at the cost of everything. There is good in every human being, in the proletariat as well as in the bourgeois, even in the aristocrat and the imperialist. Virtue cannot suddenly become the monopoly of the working classes and no miracle can change human nature.

The present economic system is devilish and must be changed. Intelligent action alone can save humanity from its impending doom and not passion, and this swing from capitalism to communism, from the worship of money to the worship of labour, is unnatural and unscientific. Like most exponents and propagandists of communism Miss Smedley is a *petit* bourgeois herself.

She was certain that the future was with the Reads and they alone could bring prosperity and happiness to unhappy China. The present rulers, according to her, were real brigands, who, in the name of peace and order, plundered the land and exploited the poor for their own selfish gratifications.

"They are corrupt from top to bottom", she denounced with anger in her eyes, "they feed fat on the toils of the millions, and nowhere the rich and the official are so blind and selfish as in China". I thought of India and told her that things were pretty much the same the world over. "It can't be so bad as here", she assured me, "and you must travel in the interior of China to see the appalling poverty, misery and the brutality of this Celestial Empire".

She referred in touching terms to the courage and heroism of the communist youths, both girls and boys, and

narrated some incidents of pluck, bravery and sacrifice of some of these future leaders of the nation.

"China's man of destiny is not Chiang Kai-Shek", she said, "but a strong silent man, a communist, now living in hiding in the fastnesses of the north-western China, with a big price on his head, and who in time and when the Nanking Government falls will be the chosen leader of New China. This man is a great strategist, a military genius, and is the creator of the Red Army. Millions look up to him and follow him, and even the minor War Lords, who are ever quarelling today among themselves, will accept his leadership and throw their weight with him".

Like Gandhi, Hitler and Mussolini, this youthful leader is a man of simple habits and frugal living, and leads an austere life, I was told. "Chiang Kai-Shek has to come to terms with him if he wishes to see a united China, and the Nanking Government should support him in his "anti-Jap" drive and not hound him as they now do", she continued after a pause, "and a crisis with Japan alone will push things to a final issue".

"What if China gets trounced and is conquered by Japan in such an attempt?", I asked, having seen something of the might of Japan as an air power. "No", she replied emphatically, "China may loose battles and get beaten but she can never be conquered". I was not able to see her point. Of course, no nation can really conquer the soul of another, but physical and political domination by an alien power is as deadly a thing as losing one's soul. The tragedy of Abyssinia had not been enacted then, and so no reference was made to it.

"The Republican Army has no discipline", she said, "and the mechanised forces of China cannot cope with the up-to-date and a hundred-per-cent efficient fighting forces of Japan, but the Red Army is a well disciplined force and can fight any nation in the world. What it needs is modern equipment and a good supply of fighting planes". She hoped that Russia would supply these in time.

The Communists, according to her, were preparing the country for a big social and economic revolution and then for a big drive against the Central Government before at proletarian State could be established in China. She thought a ten-year plan would be necessary before anything could be achieved. "A New China is in the making and I am but an enthusiastic witness and helper", were her last words to me.

A few days later I met some young artists in her company in a Chinese theatre. Most of them were communists who had played significant parts in the Red revolution. One was an editor of an influential paper, on whose head was also a price; another a painter who refused to see anything good or beautiful in the old traditional art of China; two or three actors among them who were admirers of Mierholdt and Stanislavski and who were attempting to introduce Soviet theatre technique in China; a girl flyer who could handle her machine as deftly as she could her powder and puff; and also university girls who talked endlessly of proletarian revolts, peasant organisations, mass contacts, ideologies, and what not.

But they all had one passion in common, that is their burning hatred of Japan and the inevitability of a clash with her at no distant date. They were sure they could crush and humiliate Japan. But China must first become Red before that could be done. The hope of China was communism, they all agreed. They were enthusiastic in their belief and were, in their own way, contributing their best for that happy consummation.

These young men and women were impatient, intolerant and even snobbish in their own way. They disliked criticism and above all were intolerable of differences of opinion. They were right and knew everything to be known about war, peace, economics, religion, science, art, fascism, poison gas and death. They were sure that in another ten years they would be powerful enough to lick Japan and even dictate terms to America or England. Loud were they in their declamations and louder still in their denunciations. They reminded me of Young India

in schools and colleges as I listened silently to their loud thinking.

Fortunately, I am one of those blessed beings who have no strong political convictions. To me all Governments are bad. Like organised religions they but exist to exploit the poor and the helpless. There is really very little to choose between a fascist government, and a communist government, between a monarchy and a republic, between Chamberlain and Chiang Kai-Shek. Governments are necessary evils and are tolerated as so many evils in society and life are tolerated. So, I did not much relish their wholesale condemnation of the Nanking Government or of Chaing Kai-Shek. They belittled everything done by the Repulic and even pooh-poohed some of the ideas of Sun-Yat-Sen. They were under the spell of Marx, and that was everything for them.

Now, of course, things must have changed. The present Sino-Japanese war must have given a shattering blow to all their hopes and dreams. Miss Agnes Smedley was right. A clash with Japan would alone unite all China, and already there are signs of it. The Reds are banding together to help the Central Government. But, all said, China is sure to be defeated in the present crisis. She is not ready for a war in a modern way and her equipment, in land, sea and air, is poor. Her man-power is great, but that counts as little in modern warfare. North China is already in Japan's possession and soon the whole empire will be hers unless a miracle happens and other powers intervene and put a stop to this terrible tragedy.

China, like India, lives in a mental world of her own, and her national life is as confused as her material life is poor and undeveloped. Intellectual pride, spiritual snobbery, distrust and disunion, these have dragged her down from the high pedestal she once occupied as the oldest civilised nation in the world, and the ambition of Young China is to restore her to her ancient glory by building a virile, sane, healthy, practical-minded humanity.

What Shall We Buy?

BY Dr. BHARATAN KUMARAPPA.

MOST of us do not realise our importance as buyers. We buy what pleases our fancy at the moment, without paying much thought to the consequences of our buying. For example, I go to a shop to buy a toy for a child. I have no idea what exactly I want. I look around till I find something that is likely to meet my purpose. The factors that go to determine my choice are probably the attractive colour or design of the toy, its durability, its capacity to please the one for whom it is bought and its price. Sometimes one of these factors weighs more than another; at other times another. I buy the toy and think no more about it. This is what generally happens in all our buying, be it cloth, paper, shoes, stationery or what not. Probably of all these factors the one that plays the most important part is price, We want to get the most we can for the least amount of money. If for example we can get shirting materials of a certain kind for eight annas a yard and of a slightly different kind, but what appears to us equally good from other points of view such as colour, design, durability and such like, at six annas a yard, most of us will choose the cheaper variety. But what happens when we do this? The cheaper variety finds greater sale, and that means its production increases, and the more expensive variety does not find a sale; consequently its production ceases. By our buying therefore we determine what shall or shall not be produced. If we buy cheap, flimsy, ugly articles we support and encourage production of such articles and in that very fact we stifle production of better articles.

Not only have we as buyers the power to control the nature and quality of the goods produced, but also the even greater power to aid or kill production itself. This is writ large and in letters of blood so far as the history of Indian industries goes. Take for instance our cloth industry. At

one time the cloth produced in our country was so good that it was the envy of the world. So fine was the texture of muslins produced in Dacca that a cloth measuring 20 yards could be passed through a lady's ring, and well known is the story of how the Emperor Aurangazeb was angry with his daughter for showing her skin throug her cloth and how she remonstrated in her justification that she had seven garments on. Not only in cloth manufacture but also in the arts and crafts we had acquired much skill. Relics from the past all around us in the way of temple architecture, sculpture, paintings, embroidery, metal work, marble and wood carvings, and engravings are witnesses to the high degree of skill that had once been attained in our country. But where has all this gone? Formerly when fine cloth, silks, shawls and woollen goods were made in our country, we made all that the people needed in the way of these goods ourselves. The nation bought locally made goods and consequently local production prospered. But now, unmindful of our duty to our immediate neighbours, we buy foreign goods with the result that we encourage and stimulate foreign production whether in Britain, Italy, Germany, the United States or Japan, at the cost of killing production in our own country. How can our people prosper if they have no employment, and how can they have it if we refuse it to them by refusing to buy their goods? Remember that if there is abject poverty and misery in our land, we buyers of foreign goods are largely to blame. You try to save two annas, and buy Japanese cloth in preference to Indian, but in that very act you have condemned to starvation some of our own countrymen by depriving them of a living. And what happens then? They are unable to buy goods that you produce. Consequently you have also to starve. Let me illustrate. Supposing you are a village shoemaker. You buy Japanese cloth and thus you feed Japanese producers as over against your village cloth-maker. Accordingly your village cloth-maker is without work with the result that he is unable to buy your shoes and goes barefooted. That being so, you also go out of employment. Though on the surface you

saved two annas by buying Japanese cloth you have in the end lost your all. Is that not too great a price to pay for the cloth ?

This is exactly what has happened in our country. We have bought foreign goods and killed our own industries, and with them have ruined and demoralised our people. The only sourse left if we would help to lead our nation to wealth and prosperity is to buy Indian village products. The reason for insisting on village products is that our country is a land of villages and the bulk of our people is to be found in villages. Buying factory products though Indian does not go very far, as factories can absorb only a small fraction of the population, and much of the profits goes into the pockets of a few capitalists. Our buying should be so directed as to promote and encourage production amongst the masses, and since these live in villages it can be done only if we bought village products. Village made articles may be coarse and crude at present but that is because we have stopped buying them, and the skill that would otherwise have occupied itself with them has had to desert them for other and more profitable occupations, if they could be found. The only way to improve the quality of village production is therefore to patronise it, and when this is done we shall soon find the necessary skill and intelligence centring round it even as it did formerly.

Many, especially amongst the younger generation, are eager to do what they can for the uplift of the country. They feel staggered at the enormity of the problem confronting them and do not know how they can at all help in relieving the terrible poverty and distress that exists in our land. Here is a way that is most effective and within the capacity of all. In all your buying, ask where the goods come from, see into whose hands your money ultimately goes. Make sure that it goes to our villagers. If all of us make that our criterion in buying, the problem of national uplift and reconstruction will be largely solved.

Psychology and Education

BY ANATHNATH DATTA, M. Sc., B. L.
(Psychology Department, Calcutta University).

PERHAPS no other branch of knowledge has exercised a greater influence in shaping our conception of Nature and of the living organism than Psychology. So it is natural that the system of education which is chiefly concerned with the living organism has been influenced by it.

Modern Scientific Psychology may be said to have begun about the last quarter of the 19th century. In the pre-scientific period the most determining school of thought was the Faculty Psychology. According to the faculty theory, mind is made up of certain distinct and definite faculties or powers and every mental act is the resultant of a separate faculty. The faculty school acknowleged only the inherent faculties and ignored the fact that qualitatively novel ideas could arise through the combination of simple processes. The old educationists accepted the faculty theory of mind. They, therefore, devoted themselves to develop one of the faculties because they thought that the purpose of education could be nothing but to make the child to be a perfect man or woman.

A protest was, however, made against the mechanical implantation of information. The protest took the shape of revolution towards the end of the 18th and the beginning of the 19th centuries. Rousseau did much for the furtherance of the cause of that revolution. But it remained for Pestalozzi and Froebel to direct it to the right path. Pestalozzi advocated that the aim of education should be to bring out the child's inherent capacities. He laid emphasis on the objects of observation in which the child was interested. Froebel carried out the idea of Pestalozzi much further. He said that the function of education should be to help the natural growth of the child. He emphasised the use of play in education and founded the Kindergarten

system. The initiative given by Pestalozzi and Froebel was soon taken up by educationists, and we find in modern times a number of methods of teaching, the chief among them being the Montessori Method, the Howard Plan, the Dalton Plan, the Gary System, the Project Method, etc. All the methods have proved their utility, but it is too early as yet to pronounce conclusive judgments upon the relative merits of the one or the other.

However valuable a method of education might be, it soon became apparent that one stereotyped method was not suitable for all. The modern educationists in contrast to their predecessors realise that a child is born with certain physical and mental characteristics which are the peculiar possession of each individual. They find difficulty in formulating a system which will permit individual freedom and at the same time allow everyone to live in harmony. They, therefore, attempt to classify children into groups. Here they seek the help of the psychologists who with their ingenuity soon discover a method suitable for the determination of the individual variation. The intelligence tests which were formulated with the intention of separating the backward children from the average, has in the course of a few years developed into a system to determine Intelligence Quotients of all children and thus to help in the selection of the method of instruction suitable for a particular child.

While researches in the nature and methods of proper education marked the progress of psychology in one direction, medical men engaged in the task of curing the mentally afflicted persons hit upon new psychological truths which were soon to exert profound influence on our very conception of the nature of mind's workings and consequently on our ideas of educating children as well. It was the genius of Freud which revealed the true nature of the unconscious psychic factors in the activities of men and worked out a practical method of bringing out the hidden contents to light. The unconscious like the conscious is never at rest. It is in perpetual interaction with the conscious. The conscious contents which have somehow or

other disappeared from consciousness, are not lost for ever. They retain their dynamic force and under suitable conditions appear in the conscious region. Dreams, forgetting of names, slips of the tongue, etc. are the results of such unconscious activities. Psychologists say that the man is a product of instinct and environment. The man in adapting himself in the modern society has to sacrifice some of these instincts. The educational system also works towards the suppression of these instincts. Thus adaptation is secured by repressing in the unconscious the unsatisfied wishes, ideas, etc.

Psychology brings home to the modern educationists the fact that education of the child begins from the very moment of its birth. So a child coming to school for the first time brings with him certain manners that he has already learned at home. At first when he finds himself in a surrounding where he may not possibly find any of his former acquaintance, he cannot adapt himself. But in most cases, in the course of a few days he adapts himself to the unfamiliar surrounding. He treats the school comrades as he does his brothers and sisters and looks upon the teacher at school as he does upon his parents at home. It is, therefore, necessary for the teacher to establish a personal contact with the child or to allow the child to make such a contact. When a personal contact is established between the teacher and the taught, the teacher finds no difficulty in teaching the child. The success of teaching, therefore, does not solely depend on the method but also on the personality of the teacher. In some cases children cannot adapt themselves in the unknown surrounding of the school. They want to assert their individuality and in doing so appear as obstinate, disobedient, quarrelsome, etc. For centuries the naughtiness of children has been noted without any satisfactory explanation of the cause of its origin. Psychologists have been able to make definite contribution towards the understanding of the perplexing problem. They say that if we go on investigating into the cause of such disorder, we should in the majority of cases "discover in the parents the only valid reasons for the

difficulties presented by the child." Thus to remove naughtiness we should, instead of inflicting punishment, make the child understand why he or she behaves badly.

It is well-known that curiosity is at the root of the advancement of science. This curiosity is found in children in a marked degree. They put questions on whatever engages their attention. The psychologists say that the task of the teacher is not to curb this curiosity. They further maintain that it is the duty of the teacher not to evade questions of children concerning sexual matters even, but to answer frankly so far as their age will permit them to understand. One of the leading psychologists says, "The sexual enlightment of the child is advisable. The biological processes of sex in the vegetable and lower animal world may be taught in school as early as the second period of childhood (i. e. between the ages 7 and 14). A warning against the dangers of venereal infection may be given at school to the senior pupils shortly before they leave, or at some similar suitable opportunity. But for effecting enlightment regarding the processes of the individual sexual life, the school is unsuitable; this matter can best be undertaken by some private person, and above all by the mother. Choice of the time for the last phase of the sexual enlightment must be guided, in part by the questions of the child, in part by the child's physical maturity, but more especially by the indications of psycho-sexual development."

Thus the task of the modern educationist is not only to develop the child's innate capacity and to direct his nature, but also to make him conscious of his individuality and thus to prepare him for the struggle of life. And modern psychology helps him considerably in this responsible task of his by suggesting new methods of teaching, by making him understand his relation to his pupils and by revealing new facts relating to the child's mind and its method of development.

Educational Drift or Policy?

BY DUNCAN GREENLEES, M. A. (Oxon.).

ONE of those sudden chances of fortune has thrown a Congress Ministry into power in our Province. None can say how long their chance will last, but they must certainly do much to justify their old claim to have the interests of Education at heart. Unhappily, some, even highly placed, seem to think that the formation of this Ministry on sufferance represents the victory of Congress, the attaining of Swaraj. Hardly could anything be more untrue. It would be truer to regard it with anxiety and doubt, lest it prove a snare for the unwary, lulling them into a sense of false security while international chaos brings a new struggle hourly closer. It has already been suggested by one at least of those most highly placed that now Congress is Government there is no further need to work for reforms so loudly demanded while in opposition. He forgot that Congress remains in opposition, until satisfied in its main demands.

We must face realities. For various reasons this Ministry has accepted office without the real power to implement its policy. It exists from day to day, until the large interests of Empire compel its resignation. If it really wants to help the cause of Indian nationhood, it must lose no moment, no opportunity, in strengthening the national position, ready for the next wave of the historic conflict.

I suggest that a fundamental part of this strengthening must be in the Ministerial outlook on Education.

Their predecessors, defiant of the general disgust with the unscientific and burdensome and costly S. S. L. C. Examination, actually proposed to thrust on the country *another* totally unwanted Public Examination in Form IV, which would ruin education in the lower Forms as effectively as the other has already ruined it in the higher. In addition, listening to the University, as though the

requirements of Colleges must control the needs of the vast majority of School students who never dream of going there, they raised the standard of English, thus increasing the slaughter in this foreign and unpractical subject. Not satisfied with this, they imposed fresh expense and inconvenience on candidates and the general public, by compelling them to attend centres for the examination away from their own schools, this very largely decreasing the chance of honest conducting of the examination by increasing the numbers at each centre. None of these unwise and unpopular measures has yet been withdrawn.

On the other hand, we are shocked to see the recent Report of the Congress Committee on Education, as quoted in the Press. The opinion of these gentlemen seems to be in favour of still further bureaucratising the country, and putting the chains of unprofessional men still heavier on the necks of educationists. I am amazed to see that the South Indian Teachers' Union does not seem to have been heard of by these self-styled experts. The considered opinion of the only real experts, those actually engaged in school teaching work, has already been made clear by numerous resolutions, but it is totally ignored. The caravan goes on its Madrasi road, as scornfully as along Whitehall.

A reorganization of schools of very doubtful utility, and certainly no better than an experiment, which will entail vast expenditure of public and private funds, is apparently to be proceeded with, or at least talked about till public opinion is silenced by its very inability to alter policies. Faced by the loss of revenue caused by their noble insistence on prohibition, Government will be well advised to seek some less extravagant and more effective way of revolutionising Education. The proposed scheme will entail the duplication of staffs in Schools which can ill afford even to maintain the present hands above starvation level. Huge sums are being eaten away by the upkeep of costly Schools and Colleges out of public moneys in places where private agencies have long been serving local needs efficiently and well. It will be good if the Government, before increasing outlay, carefully explore

all possibilities of retrenchment in such directions, so as to save the money needed in their new ventures.

The approval now given to "morning hours" is not really a very great advance. There has never been any objection to schools working at any hours they like; we in Madanapalle have had the early hours since about 1915, with a short break, and no one has ever wanted to interfere with us on that account. When there is no arrangement for medical attendance in Schools, and when there is no plan for seeing that all pupils get at least one meal a day, I do not think we need exult about so small a measure as that.

Let me not be merely destructive. I shall try to offer a few constructive suggestions as well as criticisms. What, then, can we feel would be a reasonable programme in Education for a National Ministry as nearly as possible without funds?

First of all, the atmosphere of Schools and Colleges must be absolutely changed and made patriotic. The comments of Gandhiji in the *Harijan* of 18th September must be immediately given effect to everywhere; the oppressive sections of the Madras Educational Rules, and all such oppressive circulars as G. O. 559 must be at once withdrawn. As he says, it is not that we want political agitations in the classroom. No sane teacher could. But we must not have students and teachers grow up into hypocritical support of what their conscience feels unnatural and wrong till doped with the academic poison.

The free choice of text-books, subject to the usual limitation of the laws against obscenity and the advocacy of violence, must be immediately restored to Headmasters. Every effort to encourage brave experiment in syllabus, curriculum, text-book and method should be made, so that we may evolve a perfect system by such private experiment. The present system of Government experiments on a nation-wide scale, changing all the regimented Schools at once is extravagant and unscientific.

When the tone of Schools is changed by this liberation from unnecessary and unhelpful interference, only then

can a clean, moral patriotic attitude grow in the citizens of the future, *on whom will depend the success or failure of future effort.* We are still producing slaves in our Schools and Colleges. Let us produce men instead.

Before any changes are made in the general outline, syllabus, in curricula and examination standards (if such are to continue), Government should take the only accredited body in the Province into full confidence, and invite and accept the considered opinion of the South Indian Teachers' Union. Dominance of the Profession by District Board Presidents, lawyers, landlords and moneylenders, must end; experienced teachers must have the final voice, as experienced lawyers have in legal matters.

The practice of keeping teachers in District Board Elementary Schools in arrears with their salaries, so as to make them duly humble to Board members, shows no sign of lessening since Congress filled the Boards. Nor does the contempt of Elementary Schools when compared with the High Schools appear to be less than in the old days.

The public opposition to a public examination in Form IV is very great. It is against the whole trend of world opinion and the clamant needs of India, which wants more and not less of students. It will finally corrupt a system already doubtfully useful, and drive every teacher worthy of the name out of the service. It is only in the lower Forms, comparatively free of the nightmare of these irresponsible examiners, that any education whatever can exist to-day. It will wither there also, unless this menace is withdrawn.

There is an almost equal demand for scrapping the public examination at the end of the School course. Its total unreliability is shown by the dizzy swing in the results of most schools from 20% to 70% of passes, and then next year back to 30% again. It is time we spoke out clearly, that we have no faith in this system. It exploits the ignorance of mis-taught students to deceive the public into the idea that it is a measure of their merit. Let it go.

In its place, the Universities can have their own Matriculations, prepared for by the few in a special two or three years' course, with Special English. For the rest, the completed School Certificate as at present maintained, may be graded as first, second or third class, on the three years' work, and signed by the Headmaster and the D.E.O.

Hindi must come, and to make way for it the English standard must be reasonably reduced. What we seek now in Form IV may then be required in Form VI, and until Form II the subject should be wholly barred. Three weekly periods of Hindi from Form I to Form III, will leave enough time for Vernacular, especially Composition, oral and written. A genuine effort to expel punditry from schools and to raise the teaching of the mother tongue to the honourable height so long enjoyed by English, will soon free those who dread the national language from their fears. The dropping of English History, with its mischievous glorying in wars and revolutionary violence, and its replacement with the story of world-wide human progress as in Wells' "Outline of History", will give Young India a truer understanding of its past glory and the future destiny for mankind. And let us even in our own Indian History drop the meaningless names of petty kings and Emperors, and lay stress only on the few heroic figures and on the fortunes of the masses of the people. Greater emphasis should also be laid on Civics and Hygiene and Diet, so that the young may grow up with useful knowledge instead of a burden of examinable rubbish. If the Ministers have few ideas on syllabuses, perhaps they could hardly do better than study Dr. Besant's "Principles of education", accepted by the S. P. N. E. as its basis so many years ago. They will find in it ideas of far greater value than those left behind by their not very long-experienced predecessors.

These are reforms which would cost nothing or almost nothing, and yet would do much to create a healthy spirit in the coming generation, while preparing the way for that public opinion and support to more radical measures, without which so-called reforms would prove the prelude to

reaction. In an atmosphere where patriotism will be as natural as breathing, young men and women will grow up to be the lakhs of idealistic, heroic, devoted teachers of the millions. In the ideal system the future will yet have to evolve. It is a greater service thus to plan for the future than to make spectacular and worthless changes in a fleeting present. If Congressmen have courage they can do much. The teachers are watching them, as are all other voters,—a little anxious at some delays, while rejoicing at their manly activity in some directions. Let the Government act soon, that the teachers and their pupils may be freed from this bondage. and then young men will see visions and the people will dwell in the great light of the Ideal.

The Problem of Sex Education

BY Prof. K. R. SRINIVASA IYENGAR, M. A.

IT is not realised by our teachers and by the public generally that adolescent youth is dangerously susceptible to sex impulses. One of the objects of education should be to ensure that youth shall not be wrecked on the rock of sex but shall safely steer past it, not in blindness nor through external compulsion, but in perfect understanding and as a result of calm reasoning. To shroud sex with a thick atmosphere of mystery, or worse, to equate sex with sin—and that is what we usually do—is surely to give a helping hand in the fateful twist in the pupil's sexual psychology. It is time our educationists did a little stiff thinking on this problem and formulated ways and means of imparting to our pupils a rational and beneficial course of sex education.

Addressing a meeting on "Students and Sex" at the Blavatsky Lodge, Lt. Col. Jelal M. Shah remarked some time ago that "boys and girls above the age of 15 should have all accurate scientific information available on the subject of sex". The main difficulty in this matter is that no one way will suit all cases. The teacher who proceeds to explain in an open class of 40 pupils or more the nature of the sex impulse and the best way of restraining or overcoming it will be not only unable to do so clearly but would either make the boys giggle and titter in merriment or turn away in disgust and confusion. The subject is so vital and urgent to the boys and so delicate for open discussion that only personal contact with them and the creation of unsuspecting confidence in them could establish that desirable intimacy between master and pupil that the latter may freely propose his doubts and the former may advise and educate him with profit.

To do this, three things are essential. Firstly, the teacher himself must be, like Ceasar's wife, above suspicion. Secondly, he must be in complete charge of a class

whose strength is in any case not over twenty-five. This could be easily done in the primary and lower secondary classes, the same teacher being asked to handle all, or almost all, the subjects. Even in the high school classes a class-master may be appointed for each section and he may be in charge of the attendance, be empowered to grant leave, sign monthly progress reports and may further handle the most important subjects. Thirdly, the teacher should be willing and be enabled by the school authorities and by the parents to meet the pupils unofficially outside school hours, to take little trips in batches and thus to create ample opportunities for naturally establishing that personal contact which alone can be a source of fruitful and all-round influence for good.

In the past when pupils were not herded together as now and when dissemination of putrefying sex knowledge through misleading publications was not as swift and as malignant as in these days of Hollywood sensationalism and industrial efficiency, the absence of sex education could not have had serious consequences. But now conditions are vastly different. Our huge institutions where boys in their many hundreds receive instruction, our hostels and boarding-houses, the numerous amusements in a city, the modern busy man's total neglect of his children, the insidious sex appeal of the cinema houses—these make practically impossible for any town-bred boy to be innocent of the mysterious promptings of sex. Irrepressible curiosity and not seldom the evil persuasion of bad companions, send him down the inclined plane at the bottom of which are sexual inversion and thoughtless sensuality.

That is the beginning of the tragedy : worse follows. When such a boy finds his master pompously declaring that sexual indulgences of every kind before marriage are heinous sins punishable with 'cuts' here and now and with unending torture in the world to come, his sex instinct gets permanently warped. The significantly boyish urge to rebel against authority, temporal or divine, and the secret

satisfaction that he is one of the "fallen" (a very Byronic feeling!) develop in him an icy cynicism and a tough reserve. As Mr. Clarke, a teacher in one of the leading English Public Schools, remarked in "The Adelphi", the absurd linking of sex with sin inevitably leads to all sorts of psychological disasters. With some, once the early genuine sex impulse has been frittered away in perverted experiments,— while yet victims of the evils,— their hearts are full of contrition. They begin to contrast what they consider to be their unworthiness with the virgin purity of the wives of their dreams, and they are most wretchedly afflicted with remorse and they decide, therefore, never to marry. They wearily ply their lonely barks and the voyage of their lives is bound in shallows and miseries.

Others, less sensitive and less emotional, marry like wise folk—in spite of the curses of their schoolmasters—and lead satisfactorily prosaic lives and more or less cleanly forget their boyish extravagances. Some others, again, swing to the other end of the scale chasing the will-o'-the-wisp of sacramental absolution and hoping to find satisfaction in exaggerated religious observances. And lastly, some few indulge in sexual excesses to such an extent that they are soon reduced to a state of thorough physical and moral wreckage and so vanish out of existence.

It is, therefore, the duty of responsible educationists to see that our splendid youths are not lost merely because they had been guilty of indiscretions fostered by evil association, by natural instinct and by the herd-system of education we have willy-nilly evolved. The prevalence of sex perversion in our schools and hostels, as in the schools and hostels of Europe and America is a fact which, however unpleasant, has to be accepted and faced squarely. Our parents and teachers should learn to brush aside their present disinclination to speak on sex matters to their children or pupils unreservedly. In a word sex must cease to be taboo in decent conversation between the elders and the young.

It must be remembered that sex cravings are very natural and the blunt butt-end of "Don't" is no satisfying answer to boyish curiosity. The mind of adolescent youth is plastic and the sanest way to reform your boy is to tackle him openly and personally, and with his willing cooperation to mould the plastic mass into an excellent model of temperance or abstinence. If instead of doing this, you frighten him out of his wits by talking of hell-fire or of expulsion from school or house, the infuriated and desperate boy in nine cases out of ten, will rush to the first amenable rogue in the street to be initiated by him into sex mysteries; and then the plastic mind of the forsaken boy will be moulded after another pattern and not all the witch-craft in the world can alter it *then*.

The chief thing, therefore, is that the whole problem must be viewed from a practical and not a severely ideal standpoint. When a teacher comes to know that a particular pupil is addicted to some form of indulgence, he has to proceed about eradicating the evil very tactfully. In private conversation he tells the boy that he knows all about it, but that he is not shocked by it. It is such a pity—but the boy could give it up, he really should. At first it may seem difficult, but it is not impossible and like a good boy he should resolve to get out of the gnawing fetters. "Vagueness is useless......the information they require is particular, not general." The teacher must never forget this. His power to move must be such that a private talk with the erring pupil must leave on the boy's mind a residue of reasoned determination to get over his weakness at any cost. The boy must be convinced, not simply that his weakness is sinful and immoral, but that it is clumsy, unaesthetic and emotionally unsatisfying.

Pupils in the higher forms of High Schools and in the colleges are past the formative stage and it must be much easier for the teacher or professor to discourse on sex topics to them. Reason and friendly advice will produce remarkable results when intimidation and threat dismally fail to achieve anything. Moreover, lecturers

and professors ought not to be shy in discussing with their students the pros and cons of say, birth-control, divorce, and the like. They can bring to bear on the discussion the full weight of their erudition and experience, and advise their students about those books that may be read and believed in, those that ought not to be read at all and those that might be read with a pinch of salt. Students may further be advised as to how they should behave towards their younger brothers and intelligently bring them up. In these and similar ways the college teacher also can do his bit towards the evolution of a sane and healthy sex psychology in the minds of the Indian citizens of tomorrow.

Education for Life

BY DIWAN CHAND SHARMA, M. A.,
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EDUCATION has been variously defined. There are some who believe that the purpose of education is to form character; there are others who think that the aim of education should be to produce a sound mind in a sound body; there are still others who feel that education aims at the complete and harmonious development of all the powers of personality. But all this is in the abstract. In actual practice, people believe that education should enable men to make their way in the world and earn their living. It is for this reason that so many people attach so much importance to vocational training these days. In their eyes the so-called liberal education should be the privilege only of a few, while this vocational training should be the right of many. It does not matter whether or not a man is able to appreciate poetry and painting, sculpture and architecture, music and nature, but it does matter if he is able to grow two blades of grass where only one grew before or to build a house or to carve a statue.

All these things, however, throw very interesting light on the social environment of which these aims and purposes were the outcome. When it was said that the formation of character was the highest aim of education, it was because of the predominantly ethical bias of the educator. Such an educator believed more in virtue than in mere book-learning. He believed character to be the highest good. According to him, Bacon, though extremely learned, was not as good as an honest person, though he was limited in his understanding and in the range of his intellectual interests. Again, the educator who believed that the aim of education was to produce a sound mind in a sound body was one who was not swayed by any ethical consideration, in his views about education. His aims were not ethical, but merely

physical and intellectual. On the one hand, he cherished the pagan ideal of physical fitness and on the other hand, he had before him the Greek ideal of intellectual efficiency. In his scheme of things, the education of the heart and of the whole world of human emotions had no place. In fact, he wanted that an educated person should be a cold, reasonable person whose guiding star should be reason, and not a person whose mental equilibrium was to be disturbed by emotional gusts. Evidently this ideal of education was held up before the people at a time when religion did not appear as the dominant note of life and when mere mental fitness was the highest thing. In the same way, the educationist who, through education, aimed at the complete and harmonious development of all the powers of personality was one who thought of education only in terms of individual life. In other words, his aim was merely personal and not social. Education, according to him, meant individual excellence and not any capacity for social usefulness. An educated person, according to this definition, was one who could make the best of this world and whose highly developed personality was a great asset for him. With its help he could get what he wanted and scale the ladder of success to its topmost rung. Thus education was a kind of personal ornament, an individual distinction with whose help all the carefully guarded doors of life could be unlocked.

In the light of all these definitions, education becomes merely a personal matter, that is to say, it has physical, intellectual and ethical implications, but not civic implications in a direct and explicit manner. In other words, it teaches directly how one can attain individual happiness and personal success, but it does not inculcate directly how one can discharge one's responsibilities to society and the State. It is thus limited in its scope and selfish in its aims. But still it is on a high plane of intellectual eminence and ethical excellence. Nowadays, however, education has been dragged down from this high academic pedestal. Now the aim of education is purely utilitarian and economic. This is, quite rightly, characteristic of our age. We, therefore, believe that the aim of education is to enable a

man to earn his living. Education is thus one of the utilities of life and wage-earning is one of its most cherished ends. It is to fit men to make their living in the so-called learned professions as teachers or lawyers or in the other professions as clerks, electricians, typists, mechanics, authors, fitters and tailors. I think it was Cecil Rhodes who expressed this point of view most candidly and vividly. Speaking about education, he said that the purpose of education, whether secondary or collegiate, should not be merely to confer degrees but to give letters of appointment. A student will be pleased more on getting a job after completing his education than on getting a diploma or a degree.

Of late, however, a new tendency is to be seen in the world of education. Man is to be taught not merely for academic or cultural ends, or for ethical or economic ends, but for civic ends. He should be qualified not merely for this profession or that, but for discharging his duties as a citizen, as a member of a kingdom or a republic or a commonwealth. Education should, therefore, be so organised as to enable people to know their duties as citizens and to prepare them to fulfil their obligations properly. It is, therefore, being said that this should not be done in an indirect manner, but in a direct manner. All the subjects taught at schools and colleges should subserve this supreme end. They should not be studied merely because they give some sort of training, real or fancied. For instance, the school or college life should be so regulated as to be a duplicate of the national life on a very small scale. In a democratic country, it should foster the scholar's faith in democracy and the democratic machine and appurtenances, while in a Fascist or a Nazi state it should confirm the scholar's faith in the particular form of the government of the country. Thus, in a democratic country like England students would be taught to swear by the ballot-box and to say that democracy is the panacea for all kinds of national ills while in a Nazi or authoritarian State they will be dragooned into saying that the worship of the leader is everything. This kind of bias will not be confined merely to those institutions in a school or a college

which aim at the collective security, well-being and happiness of the school or the college community, but will be extended to all the subjects taught at a school or a college. History should be so taught as to breed the student's pride in the achievements of his countrymen and in the potentialities of his country. Says an expert, "Such teaching of history and citizenship should produce in the future citizen at the end of his school career some knowledge and appreciation of his own social order, of the world order, of his responsibilities and privileges, his rights and duties therein, an optimistic, yet balanced view of the possibilities of the situation ; an optimism that should be stressed, for here is the opportunity to link the enthusiasm of youth to the task of facing political and civic difficulties courageously and energetically, with a will and power to act with determination." In the same way are other subjects such as Geography, Economics, Mathematics, Arts, Science and Biology to be taught. The purpose of the study of all these subjects is the same : to help a student to find his place (and his country's place) in the scheme of the Universe. The teacher is to touch these subjects in such a way as to arouse the civic consciousness of the student to make him a good citizen and an active patriot. Of course, the conception of patriotism differs in different countries. In England it means faith in ordered liberty and the imperial destinies of the English race ; in Germany it means faith in Hitler and in the superiority of the Aryan blood and Nazi culture and flaming hatred of all those who humbled Germany during the last Great War ; and in Italy it means worship of Mussolini and dreams of reviving the ancient imperial grandeur of Rome.

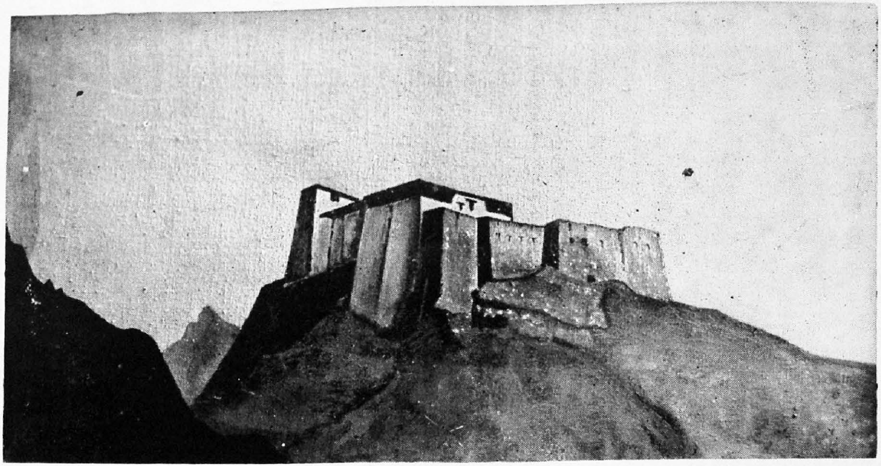
Thus we see how the conception of education has undergone a change in the West. There are, however, thinkers like H. G. Wells who do not believe in any type of education described above. In the first place, Mr. Wells does not believe in any narrow, selfish and parochial kind of patriotism. He also does not believe in the competitive basis of modern Economics in which one man's meat is another man's poison. At the same time, he hates

the territorial and economic rivalries of the nations of to-day. He therefore thinks of the federation of mankind and of a world in which there should be one polity, one system of Economics and one form of Government. But how can this be brought about? According to Wells, this can be done through education. So he wants that education should not rouse any patriotic consciousness, but international consciousness. An educated man should not think in terms of his own life, or in those of his country, but in terms of the whole world.

This was exactly the underlying idea of the sort of education that was imparted in Ancient India. If we study the educational system of ancient India, we find that it compares favourably with the most progressive educational systems of the West. It was in fact, in conformity with the ideals of the most progressive thinkers of the West of to-day such as H. G. Wells. In the first place, it aimed at the complete development of the human body. This was secured not merely by proper diet and wholesome exercise, but by hourly contact with Nature and inculcation of the principle of Brahmacharya or of self-control in its broadest sense. The young scholar who wanted to be educated had to set apart about twenty years of his life for a rigorous kind of self-discipline, not only in matters of his body and intellect, but also in those of his emotional life. He had to learn how to control his breath, his bodily movements and his feelings and passions. He went to the *pathashala* as crude iron ore and came out of it as finished steel. Again, the student, under the ancient Indian educational system, had to undergo a comprehensive system of intellectual training. He had to learn such abstruse subjects as grammar, logic, the science of Government, Astronomy and what not. All these subjects sharpened his will as well as deepened his powers of understanding. He became sensitive to flaws of all kinds; blemishes of style, illogical argument and fallacious reasoning. Above all, this system produced in him a burning desire for living the good life. It did not merely repress and suppress his savage and unsocial instincts, but

sublimated them. It taught him to prefer the straight path to the crooked, the good to the evil and the life lived in accordance with the sanctions of the Shastras to the life lived in conformity with a kind of jungle ethics. Besides these, it taught him reverence and detachment. He reverenced all kinds of life and especially the wise and the good. Thus, he could never fall a prey to cynicism which, according to Bertrand Russel, is the bane of the youths in the West to-day. He had faith in human nature, in the ultimate triumph of good over evil and in the divine law which guides and controls the destinies of all sentient creatures. Thus he went into the world, a strong, wise and self-reliant man. The problem of earning his own living did not trouble him much; nor did he think of sinking for ever into a life of ease and comfort. He knew that he was to discharge his duties as a house-holder for about twenty-five years and then go again into the world to serve his fellowmen. It was thus the ideal of service that was of supreme importance for him. He was taught not to live only unto himself, but for others. His education was thus education for life, in the broadest meaning of the word. He knew how to rise above petty selfishness and narrow greed. He lived a dedicated life—a life devoted not merely to the good of all those who were related to him, or of those who were his compatriots but of all those who were his fellow-sojourners on this earth.

All this shows how much we, the people of to-day, can learn from ancient India, the glories of which Swami Dayananda and other reformers sought to revive.



"TIBETAN STRONGHOLD"
By Nicholas Roerich.

Natural Sciences in Our Schools and Colleges

BY DR. T. V. RAMAKRISHNA AYYAR, B. A., Ph. D.
Retired Government Entomologist.

IT is generally conceded that the chief aims in the education of the youth of any country are to make him a healthy, well-bred, good citizen with sufficient culture to be useful to himself and his country. The thrilling inscription one finds at the entrance gate to the famous Harvard University in the United States puts this idea beautifully in a nutshell. The motto reads: "Enter to grow in wisdom and depart to serve better the country and thy kind". It need hardly be emphasised that to train our young men into worthy citizens of the motherland the educational ideals we organise must be very conducive to such a consummation. The traditional methods of education merely in the three R's with a lot of religious influence and superstitious ideas have produced very unfortunate results; some of our young men who are said to be educated are blissfully ignorant of many of the common things around us and even some of the fundamental truths regarding their own bodies, health and hygiene!

Education in general scientific matters was until lately not given any attention and the result has been very unfortunate. As was the case in the West during the middle ages, teaching was mainly in the hands of purely religious men and priests who dared not tolerate any scientific knowledge. To a question "What is the safest thing a person can do to avoid injury from lightning", a teacher of this kind advised the enquirer to "draw his bedsted to the middle of the room, commit himself to the care of God and go to bed". The Cromwellian dogma "Trust in God but keep your powder dry" appears to be a more advanced maxim. Even with the introduction of science teaching in our schools three or four decades ago only a smattering of physics and chemistry alone was imparted to the school children and these mostly in theory; the natural sciences

(I mean by this the Biological sciences) were severely left alone. The study of Zoology — the science of vermin and beasts was thought derogatory or vulgar. The attitude towards lower forms of life in the early days was one of disgust and aversion. Children were warned to avoid them and regard them as a cursed lot specially created to torment and be a nuisance to man and as such unworthy of any attention. The ignorance regarding plants and animals among our youth thus became chronic. It may not be uninteresting to point out to a few examples of such colossal ignorance of general things, especially of natural history, among our boys in a Public Examination even as early as six years ago.

The following are some typical answers given in the examination on general knowledge.

Cochineal:— 1. In Cochin the Maharanee is called the Cochineal. 2. a small white insect, its presence under the skin gives to Europeans their white colour. 3. in Cochin a prostitute woman who is kept is called the man's Cochineal. 4. is a dangerous germ which is the root cause of the much-dreaded disease known as Cochin-leg or Elephantiasis.

Snipe:— 1. Is a small camera that takes photos very quickly. 2. is the favourite food of Europeans on their marriage night. 3. is a term of abuse used only by soldiers. 4. is a wild animal like monkey found in the forests of Brazil.

Hookworm:— 1. A person like a pundit who always studies. 2. these are found in our daily walks of life and enter into our body through the down part of our feet and in no time we get hookworm disease and people who are aware of this use Port Wine to fight the hookworm.

Ostrich:— 1. Is a female of the camel. 2. is a desert bird that lives on stones and fires. It can see even when it is blind.

Zebra:— 1. An animal lives in the sea. 2. zebras are superior classes of asses.

Giraffe:— 1. Is a kind of present during Christmas season exchanged among European population. 2. an animal that resembles a kangaroo but has no horns and no cavity in the stomach also found in Africa.

Kangaroo:— 1. Is the only animal that lays egg like a bird. 2. is the name of forest people of Australia,

Southern Cross:— 1. Is a vegetable grown in English gardens. 2. is worshipped by all Roman Catholics. The Protestants refuse to worship it. 3. is a railway in England called the Southern Cross railway. 4. is name given to the sport wherefrom a ship from the Mediterranean crosses the Himalayas to the Bay of Bengal.

Cheetah:— 1. Is an account book. 2. is a cruel non-vegetarian bird of the duck family.

Mullet:— 1. A money lender who takes away a man's money is called a mullet.

It has to be realised both by parents and educational authorities that all children by the time they reach adolescence should be equipped with some essential information in general scientific matters to meet the needs of modern life in various ways; efforts ought to be made to diffuse knowledge on the fundamental facts regarding our health, food, clothing, sickness, hygiene, comforts etc. and of the common and familar objects around us. Our elders did not unfortunately realise that in our young lads interest in life forms always precedes that in inanimate forms and that they are most interested first in animals, then in plants and then only in physical material. In the West one very often finds a love for natural objects like plants and animals fostered through early childhood and we meet with numerous men engaged in diverse occupations taking special interest in natural objects as a hobby or a pastime or even as a relief from the daily drudgery of their ordinary vocations. On the other hand, we find very few among us who exhibit any leaning towards lower forms of life. It is certainly not because we are unfit for such work but solely on account of the peculiar early training we get in relation to such objects and the consequent attitude we develop towards them. Can any of us honestly point out among Indians a single name like Aristotle, Limnaeus, Cuvier Darwin, Gilbert White, Huxley or any of the host of other giants in natural history which the Western countries can boast of? Until recently there was hardly any well-known worker on Indian Natural History among Indians, though we have produced hosts of philosophers, historians, chemists, physicists, etc.

Though the deficiencies in science teaching have nowadays begun to be realised in this country sufficient attention has not yet been paid to the necessity of imparting knowledge on Natural History subjects to our school children. We often find profound ignorance of ordinary and every day phenomena in the animal world even among our educated men and graduates; many of them often hesitate to believe that the crawling caterpillar is the child of the fluttering butterfly, or that the frog is the

parent of the tadpole in the pond! It may be emphasised that the value of biological knowledge is not merely academic; it has in addition both utilitarain and moral values to humanity. Apart from some general knowledge on higher animals like cattle, birds and other domestic animals how very few of our educated men have any clear ideas about such valuable useful products from the animal world, as honey, lac, wax, pearl, coral, cuttleshell, cantharidin, musk, ambergris, civet, guano, sponge, spermaceti, silk or cochineal? I dare say most of our educated men are blissfully ignorant of the many vital relations existing between men and many lower forms of life or the injurious or beneficial effects they produce on human welfare. The following words of Prof. Wilson may be added for the information of such folk:

> Animal life from its lowest organisms among which lurk some of our deadliest foes as well as useful friends to the highest organised forms, touches and affects our lives and welfare in numerous ways. No man can be considered well informed who has not some general knowledge of economic Zoology in its more direct relationship to human life, while to the scientific investigator the subject has the charm of endless variety and service to mankind.

Among the moral and intellectual lessons we could gather from a knowledge of the bionomics of many lower forms of life, are such worthy traits as duty regardless of reward, industry, perseverance, perental affection, communal unity, etc. displayed by many animals and which are worthy of imitation by many an erring and wayward human being. To take only the instance of bees or ants, their sense of duty and co-operation, their unceasing diligence and industry, their wonderful architectural and sanitary instincts and their marvellous sense of domestic economy and forethought bordering on intelligence are some of the very remarkable features which we can observe among them every day.

It is interesting to note that some of these wonderful qualities among them, especially the absence of such undesireable human qualities like jealousy, idleness, vanity,

snobbery, discontent etc. rampant among us have made Walt Whitman give expression to the following beautiful lines:

I think I could turn and live with animals
They are so placid and self-contained
I stand and look at them long and long
They do not sweat and whine about their condition
They do not lie awake in the dark and weep for their sins
They do not make me sick discussing their duty to God
Not one is dissatisfied, not one is demented with the
idea of owning things
Not one kneels to another, nor to his kind that lived
thousands of years ago
Not one is respectable or unhappy over the whole earth.

Some spade work is being done by educational authorities at present, but a good deal more has to be done in the way of offering facilites for our youth not only to equip themselves with sufficient general knowledge of natural objects but also to specialise in particular branches of Natural History which will contribute to the material wealth and general prosperity of the country such as Pisciculture, Ornithology, Parasitology, Helminthology, Entomology, Animal Husbandry, etc. It is the duty also of Indian Universities to offer such special subjects as themes for investigation to enthusiastic natural science graduates for higher academic degrees in science. The beginning must, of course, be made by making the teaching of general facts in Biology compulsory in the lower high school classes. Interest in the subject can also be created and increased by encouraging students in making Natural History collections visiting museums and going out occasionally on field excursions. It is high time that India produced eminent naturalists who will become authorities in their special lines of biological research.

Mental Adjustment

BY Prof. M. S. SRINIVASA SARMA, M. A.

"OVER one-third of the sickness in the civilised world to-day can be traced to psychological origins"—this sentence occurring in an article in a journal of Psychiatry arrested my attention. This is a serious matter and a grave responsibility rests on the shoulders of parents and teachers in this connection. The major portion of our mental attainments comes through the process of education; and since the foundations of education are centred in childhood, it follows that correct thinking and a balanced outlook on life should be acquired at this period of life. When wrong attitudes and vicious mental habits are discovered, it is usually found that they had their origin in the early life of the individual. The central fact of life is adjustment; and life is not a mechanical routine but a creative art. A thing is what it does; and life consists in bringing about an adjustment between inner and outer conditions. Life functions through its environment; and man must master his environment, or else adjust himself to it. To follow the workings of the growing mind, to guide its development on healthy and sane lines and correct its faults, and train it to become fit and ready to adjust itself emotionally and intellectually to the everchanging and discomfiting situations of life should, I think, be the primary function of education. Consequently the school should be a place where the pupil learns to adjust himself to many new conditions of life, and acquires correct mental attitudes towards men and things.

The unemployed, the drunkard, the criminal, the sickly, the insane and the mentally disordered people are all failures in life because they are lacking in the capacity for mental adjustment. There are two ways of adjusting to the difficult conditions of life which are growing harder to-day owing to increasing speed and more exacting standards amidst circumstances, economically depressing and politically and socially unstable. They are, (1) the wrong

methods which inevitably lead to life's disaster and (2) the correct methods which insure personal success and social harmony.

"Sour-grapism" is the mental frame of those who cannot attain reasonable success in the ordinary tasks of life. The essence of life is action taken in the line of the greatest resistance. Acquisition of skill and growth of full manhood are realised only when difficulties are met and obstacles overcome. It must be remembered that a smooth sea never made a skilful mariner. Children should be trained to give up the supine attitude of idly accepting failure and spinelessly proclaiming that such things are for the best. It is a notorious fact that in all mental disorders there is a complete retreat from the hard facts of life. From the stand-point of mental growth, it matters nothing what an individual suffers; but it matters everything what he achieves; one achievement leads to another achievement; and finally nothing succeeds like success. The joy of successful accomplishment is, perhaps, the greatest factor making for a healthy outlook on life.

"Blame" is a wrong process of mental adjustment. "A bad workman quarrels with his tools," is a common proverb which illustrates this fact. To throw the blame for one's mistakes on somebody else instead of frankly accepting them is the sure way to mental collapse. A boy who fails in the examination blames the paper-setter, or the examiner, or his own ill-health at the time. Blame is always the expedient of impotence. A process similar to blame and equally degenerating is what is technically known as "rationalisation" which consists in giving excuses for justifying one's failure or incapacity. A man who is inefficient at his job, in order to avoid confessing his incompetence, complains that he is not being given fair play by his employers and colleagues. Lack of mental balance is almost invariably the result of unwillingness to see things as they are.

"Introversion" is another mode of maladjustment which results when the individual finds it difficult to resolve his tensions objectively by making straightforward

responses to his fellow-beings. He longs for greatness but lacks the ability. Life to him is a round of disappointments, hurt feelings and frustrated desires. Retreat and inaction being his essence, he shuns the sharper realities and tasks of life, and shrinks into a world of reverie and day-dream.

Yet another form of mental maladjustment is the notorious "Ostrich solution ", in which the individual refuses to admit the existence of the difficult situation in which he is placed. An extreme form of this process is " forgetting" which verges on the abnormal. Disagreeable adjustments, unpleasant duties and hard tasks tend to drop out of memory through " repression ", and become powerful factors in disintegrating the personality.

These are a few of the various expedients of escape from the pressing realities of life instead of manfully facing and overcoming them. These childish recipes and foolish evasions are, like opium and alcohol, futile and disastrous in the long run. But what then are the principles of correct adjustment ? The only protection against a negative orientation which is disatrous to the individual and the community is self-knowledge born of self-examination and self-criticism. Frank and honest self-criticism puts us on our guard against the attempt to find a refuge from reality in such excuses as forgetting, accident, overwork, illness, etc. The first step towards satisfactory adjustment is to see things as they are and recognise one's own limitations. Every individual has the weakness to rate himself higher in desirable traits and lower in undesirable ones. Every one of us has his own drawbacks and defects; it is wiser to know and frankly admit them than blindly cherish the delusion that we possess infinite and all-round capacity.

The next step is the cultivation of an objective viewpoint. We should learn that disappointments, failures and frustrations are all in the game of life, and add " pep " and romance to it. An impersonal view of the situation will help to avoid annoyance and soften the blows of failure; and in the event of personal misfortune one must avoid

the devitalising mental process of "self-pity". This is, perhaps, the worst enemy to our happiness and sanity. Much of human misery and social maladjustment arises from the individual's bloated notion of himself, and the fanciful idea that he is the victim of persecution. It is necessary, therefore, to control our emotions, especially fear, worry and disgust, and develop an "elephant skin".

Happy adjustment in the last analysis depends on the formation of right "attitudes". Attitudes are personal frames of mind in relation to men and things; they are emotionally tinged, and determine the kind of personality and the type of behaviour. They are the functional units in the organisation of character, and are formed after a long and delicate process. They are imitative and are copies from people who have prestige for the individual. Helpful and right attitudes towards men, work, caste problems, government, religion, parents, etc., are formed, strengthened and refined through sympathetic contagion from the persons around the growing child. The activities of the parents, teachers and other fellow-creatures repeatedly evoke in the child emotional responses which later on develop into well established attitudes; he learns to like and admire and reverence those qualities which are held in high esteem by those whom he respects, and to scorn and despise those qualities which they condemn. The decisive influence in the formation of correct attitudes comes in the main from the family, the school and the play-ground.

Social demands are exacting, delicate and multitudinous: they require careful adjustment and harmonious adaptation. The harmony, repose and joy that we get from happy social life are due to right attitudes. They are the logical outcome of a clear and comprehensive grasp of the enduring values and the eternal verities of life, and express the creative urge of the self in earnest pursuit of them. What is the secret of happiness? It consists in a state of mind, and not in the possession of material goods. It is to be sought, not primarily in changing one's environment, but by achieving a new attitude towards things. Jesus Christ has given the psychological key to the acquisition

of this priceless treasure. "The Kingdom of Heaven is within thee". Here is the essence of religion and the philosophy of happines in a nutshell. This attitude gives us the abiding anchor in life, and rescues it from ennui, emptiness and futility. "Make thy claim of wages a zero; then hast thou the world at thy feet"—said the great "practical philosopher", Carlyle; and he was unconsciously but emphatically urging us to cultivate the right perspective and the proper attitude.

Of course life will always have its unending tragedies. The agonies of helpless suffering and the depths of infamy and cruelty which the human record discloses fill our minds with dismay, disgust and pessimism. Sickness and pain, separation and death, injustice and corruption are the usual lot of the majority of human beings. But it is not these things by themselves that make life weary and unbearable; it is the *way* we take them — our fear and worry and anxiety — that makes our existence miserable and intolerable. But let there be a change of attitude and let us view the things from a different standpoint. At once life becomes a beautiful vision, a glorious possibility. The smile of a healthy child, a friend's good fortune, talents that find their fruition in self-expression and social service — these bring an ineffable joy and a pure gladness of heart to any one who has the correct attitude. To see things *sub specie acternitatis* is the function of right attitude and the secret of happiness.

All disorders of conduct are ultimately traceable to wrong attitudes formed in early years. The idea of mental health is intimately connected with the idea of socialised attitude which is the condition of the individual's all-round development. The whole catalogue of anti-social conduct is due not to any inherent evil nature but to wrong attitude towards society. Character in its essence is the organised capacity for efficient social adjustment; and morality is only another name for our social attitude towards the human environment. Irregular family life, bad companions, lack of proper training, mental conflicts, these produce wrong attitudes to life and society, and give rise to

delinquency and crimes. The human mind is a recording instrument taking the impressions of all those events and processes which have any definite meaning or value to the individual which in course of time crystallise into definite attitudes. Since attitudes make or mar the lives of children, the responsibilites of the parents and teachers become tremendous. Theirs is the duty of instilling sociability, catholicity, tolerance, and "give and take" attitudes in them, and train them in social efficiency. The central citadel of the educational fortress is the character and personality of the teacher which wield a much more powerful and enduring influence than his actual advice and teaching. The teacher by his own living example and by his comments on the characters of men in history and literature directly helps the pupils in the formation of correct attitudes. A sublime thought, a fine moral embodied in an interesting story, a profound experience expressed in beautiful words soaks readily into the heart, resides permanently in memory, is preserved as a joy for ever, and becomes an inspiration throughout the whole of life.

Journalism as Sadhana

BY N. LAKSHMANAN

MR. K. Natarajan, the distinguished Editor of the *Indian Social Reformer*, entered on his seventieth year on 24th September 1937. Half a century ago, he began his journalistic work. He is the shyest among our publicists. He shuns the limelight and prefers to be confined to the editorial sanctum while making history by giving the correct lead in moments of crisis in our national life. In Europe and America, Journalism is a profession, a very lucrative profession. Whatever may be the case elsewhere, Journalism in India has somehow or other acquired the character of a mission rather than a profession. All the more notable Indian journalists during the past two generations have conceived their office as a mission. Even now few Indians enter Journalism as a means of making money. The great attraction of Journalism is, as Mr. K. Natarajan said, that you can strike a blow on occasions for the cause you have at heart.

*Thomas Masaryk (1850--1937) described the essentials of a good journalist as follows: "He must be well-informed and capable, able to observe and appraise; he must be indifferent to nothing since the whole world, the whole of contemporary life, is his canvas. To be a Journalist means to observe and to understand the contemporary world ...... Of course a good Journalist must have character; he must defend freedom of speech—freedom, freedom!" Mr. Natarajan himself would give a similar advice to aspiring journalists among us. To him Journalism is *Sadhana* or realisation of life, as is obvious from his reminiscences which are appearing in his journal under the caption *What I Believe*. He is known by his writings not only in India but also in America and elsewhere as is evident from his book "Our Trip to America". He delivered the Gaskell lectures and attended the second World

* *President Masaryk Tells His Story*—Published by George Allen and Unwin, London.

Parliament of Religions held at Chicago in September 1933. In his religious writings he often lays emphasis on the fact that under the most unpromising conditions the geniaus of India for synthesis never deserted her. He is of the firm conviction that India, being the meeting ground of the great religions, is destined to be the home of a supreme religious synthesis. "The world is in travail for a new birth. India has a great part to play in the near future". He is a profound student of sociology and comparative religion. During the middle years, his mind was wavering between Hinduism and Christianity. The more he thought of Devadasi system and the curse of untouchability (two old blots on Hinduism) the more he felt drawn towards Christianity But the unique toleration of Hinduism and its noble type of motherhood kept him back and enabled him to realise the abiding peace and poise of Hinduism. As he is a great believer in the harmony of religions he is making a tremendous deadset against proselytism. When certain American Missionaries challenged him to define proselytism, he said that proselytism is the method of recruiting non-Christians to Christianity much in the same way as labourers are recruited to colonies, by prospects of social and economic amelioration, better food, better clothing, better housing and above all a protected life. This is the outcome of his belief that harmonious economic and political relations between different countries can grow only out of a harmonious relation in the highest field of all, the spiritual. This view-point has won acceptance among leading men and women in America as is evident from the Hocking Report on *Rethinking Missions*. In view of the drastic measures adopted in Turkey and other States, he is in favour of invalidating the conversion of minors and making registration compulsory for changes of faith.

It is not widely known that Mr. Natarajan is one of our recognised authorities on educational matters. At any rate, Sir Michael Sadler and his colleagues on the Calcutta University Commission knew this and did Mr. Natarajan the great honour of placing at the head of the chapter on Women's Education an observation which he made as

President of the Bijapur Social Conference in 1918. Therein he said that the education of a single girl meant the uplift of a whole family in a larger sense than the education of a single man. He has proved this by precept and personal example. He is, first and last, a great champion of womanhood. Nothing gives him greater confidence in the future than the nascent Women's Movement with its all-India outlook and patriotism.

Those who are not familiar with the contents of Mr. Natarajan's brave little paper are under the impression that it deals exclusively with the ordinary items of social reform as understood in our country. It is not so. On the contrary, all aspects of national and international life are dealt with in a thorough manner in his journal. He has the good fortune of having his talented and widely travelled son Mr. Swaminath Natarajan as the joint Editor.

The Indian Social Reformer was first started at Madras in 1890 and was transferred to Bombay in 1900. This journal shares with the "Mahratta" of Poona the reputation of being the oldest weekly journal now existing, with the exception of the "Indian Messenger" of Calcutta. "The Indian Social Reformer" has been conducted from its commencement not only as an advocate of the social reform movement but also as a record of all the events and phases of contemporary life which all "Indian Green" will find necessary for a constructive history of the Indian people under British rule. Mr. K. Natarajan is of the opinion that the true weekly journal should never be avowedly partisan. At any rate, its partisanship should never be associated with persons. He thinks that the position of the weekly newspaper in the Press is akin to that of the Second Chamber in the Legislature. One often comes across this second chamber frame of mind in Mr. Natarajan's Editorials. When the Imperial Capital was transferred from Calcutta to Delhi in 1911, all the Indian Journals condemned the measure as retrograde, but Mr. Natarajan supported it by enunciating his cherished principle of Historic Continuity. However, from the sequel, he

found out the reactionary character of the measure and recently revised his opinion.

One more example will suffice. Before Gandhiji sailed to England to attend the Round Table Conference, the I. S. R. was almost alone in dissuading Gandhiji from going to England. Similarly Masaryk who met President Wilson in America "warned him not to come to Europe to attend the Peace Conference, but he would not be persuaded. He was too keen on his plan for a League of Nations to think of difficulties". The European politicians sadly failed to appreciate the idealism of President Wilson and Gandhiji. Thus Mr. K. Natarajan is an impartial and farsighted observer of men and measures. After years of experience he has acquired a certain quality which makes him a sort of living barometer sensitive to changes in the political atmosphere. His numerous friends and admirers pray that his consecrated life should be spared for many more years of service to India and the world.

Prison Reform

BY MARGARET E. COUSINS, B. Mus.

ALL of us in India who have been life-long workers for reforms are feeling a sense of exhilaration now-a-days with the entrance into the arena of affairs of Provincial Governments—Ministries of a totally new calibre.

The Congress Ministries are like the infusion of a new life-stream, and the heart beats more quickly with new hope of new accomplishment in this new era. Up till now we have been knocking our heads against an iron system of bolts and bars, against a wooden bureaucracy, against a set mentality. These were all founded on prejudices, precedents, and lack of direct personal experience whether the Cause was the rights of patriotism, or women or Harijans, animals or criminals. Now in India our Ministers are all ex-prisoners and know jails by hard experience from the inside; our women are themselves amongst the legislators, our Temperence reformers, and the chief of them our Madras Premier, are in charge of the Excise and Abkari system and revenue; even the monkeys and singing-birds who die in their thousands during their exportation to Europe and America have a chance of obtaining liberation!

Whatever be the shattering of illusions and fond hopes in possible store for us, whatever be the revolutions and reforms that can be accomplished (and may they be many!) within "the four corners of the Act", at any rate the drive for Prohibition in this Presidency of Madras shows the new mentality and power in high places and make us optimistic. Everyone knows that the influence of alcoholic drink provides half the prisoners for jails. Striking at the root may also lop off the branches and make the reform of jails to which the Congress Ministries are pledged more likely to be successfully tackled.

The Madras Government has already made a tiny gesture in the direction of jail reform by granting butter-milk to its prisoners, but let it beware of magnifying such a

detail in face of the enormity of the problem, before the nation of Crime and its Cure. What are the figures concerned? Few people know them. The average population in Indian jails on any given day is 700,000. The actual annual cost of maintaining these Indian jails is Rs. 1,750,000 (seventeen and a half lakhs). As many as eleven hundred prisoners are hanged in these jails annually. We look to India to put forward new ethical solutions of human problems now that India has an Indian hand in affairs. The poverty of India also insists that such a huge sum must be saved to the taxpayer. Penology has become a psychological science instead of a system of terrorism and revenge. The non-co-operation movement brought so many of the people and their leaders into jail that they are awake to the necessity of jail reform as few of the peoples of the world have been when they got government into their hands. They realise that each member of society has a duty to an offender against law and order which must be discharged in a kindly and intelligent fashion. We have imbibed at first-hand a new and modern mentality towards the offender and present public opinion will back up the revolutions in the ways of treating law-breakers that India must pioneer, even as Russia has done.

This is a subject with which my life has brought me into touch from many and unusual angles. My parents told me that a policeman was an admirer of mine when I was a baby, and spent hours nursing me! I have served sentences in prison three times (a different country each time) for good, political causes thus qualifying to be known as a "Habitual" and in one case was a hunger-striker for a week. I have been a non-official visitor to Indian jails, and as the first woman nominated as a honorary Bench Magistrate I sent many people to jail during my five years of office. The climax of my jail experiences was the revolt of my whole being when I sat in a cell not five minutes walk from the gallows building in which a little Indian sister (non-political) was being legally hanged though she protested to her last moment that she was innocent of the murder with which she had been charged. I have had enough contact with jails to write a book but space allows

only a few points to be brought out. We have to haul down the mountain of crime by tunnelling at it at both sides. Reduce the causes of crime. Revolutionise the present system of dealing with crime.

The majority of prisoners are ordinary enough people in their nature, perhaps a little more weak-willed, a little more liable to strong emotions, a little less calculating or less custom-controlled than other people, or in a good deal worse circumstances than the general unit of society. It has been computed that the chief causes of crime are poverty, pubs and passion. I exclude in this article the prisoner for political purposes. Prohibition is tunnelling away the pubs, and the possibility of the deteriorating influence of drink and lowering the crimes that are due to drunkenness. But let it not starve the impulse inherent in the hearts of these people for good fellowship and enjoyment and expansion of nature into some realms of romantic adventure, or else that side of human nature will rise in revolt against enforced asceticism and separativeness and defeat all the laws of Prohibition. Rightly organised prohibition can half empty the jails if innocent attractions are substituted for the drink.

Only the introduction of a new social and economic order will remove the poverty of India. It is also a world problem this re-adjustment of the products of the people and the elements to the guaranteed minimum needs of each human being so that theft no longer becomes an instrument of self-preservation. This must come. It will be an inevitable corollary of the industrial and machine age. But it will take time. We have to find new ways of dealing with offenders who are the victims of environment, ignorance and poverty. These are the present difficult class of short term or habitual prisoners. Crimes arising out of sex passion motives need a complete survey from the woman's angle to supplement the long existent man's angle alone operative on such cases in the past. The equal moral standard has to be brought into play, and the whole position of women has to be made economically and legally equal to man before such wrong-doings of both sexes become non-existent. Meanwhile, crimes committed in passion have

to be dealt with in totally new ways, and prisoners of this type can easily be reclaimed. Crimes of sudden anger come under the same category. Finally there are a small percentage of people whose natures seem so bad that they can only be called moral lunatics, and it is as necessary to segregate them from normal humanity as to keep mental lunatics locked up for life. Diseases of the morals are more dangerous than diseases of the mind or the body.

Child delinquents must first be salvaged while the problems of poverty and passion are being eliminated. A good beginning has already been made in this direction in the Certified Schools and the Borstal Schools where education and human environment and capable and kindly teachers and staffs create a new world for these flotsam and jetsam of life's dark river in the streets. Every province of India must have a Children's Act in good working order, with Children's Courts, women as well as men magistrates, women and men staffs, good Remand Homes and Hostels and Clubs for those discharged and Employment Bureaus, and Big Brother and Big Sister and Probation Helpers (the word "officer" has an unhelpful connotation) and financially stabilised Rescue Homes. Thus the children of this new India will be ready to take their place as responsible law-abiding citizens year by year. No child or young person should be discoverable in one of our ordinary jails five years hence.

Next comes the class of first offenders. Instead of terms of imprisonment or ordinary fines, these people must be dealt with by the Probation System and Preventive Detention system which prevent them from getting into jail where in the present ways they only learn how to become "habitual". Sentences should never be so short that they are neither reformative nor deterrent. Every chance must be given the offender to make good outside under helpful supervision and through Probation Friends, who will study their character, environments and capacities.

If the people fail to respond to this system of help then within a prison of the new type the first thing to be changed is the old-style staff of jails. In as quick a time

as possible all the former set of Jail Inspectors and Jail Superintendents should be pensioned off. Recruitment for jail staffs has to be on entirely different lines. In the past in education it was thought that any one stupid person could and might teach little children. The modern psychologists and pedagog have taught us that Kindergarten and Montessori teachers are indispensable for producing right results The law-breaker is a child-mind in morals and needs not a slave-driver to reclaim him during his term of imprisonment but warders and wardresses of a type as much superior to the present as the Montessori teacher is to the lower elementary untrained teacher. Right now the Governments will have to set about creating a new type of social service training school for men and women who will be adequately paid for what will be amongst the noblest altruistic work, the reformation of those now called criminals, many of whom are more sinned against by society than sinning. The medical martinet, the ex-army man, the bully, the bribable person, high or low, must have no place in the prison staffs. Jesus Christ gave a definite direction that his followers should serve him specifically in jails and orphanages. We, the public have to change our outlook also and encourage the best people to take up such work and create a new status of honour for such as will take up this work. It may sound Utopian just now but it is being tried out in some other countries and Russia has much to teach some person like young Rao Bahadur G. Narayanaswamy Chetty who should be sent to Russia to study their jail reforms with a view to adapting them to India in its necessary experiments in Swaraj Penology.

That is how the Japanese progressed. They sent their envoys to different places to study their individual methods and then they selected the one that seemed best for Japanese purposes and adapted it to their needs. The new Indian Governments should be sending out envoys similalry for training so that they may be able to organise things on an entirely new code and not merely try patchwork "reforms" of a system which stands self-condemned from all sides.

Making prison work educative, productive, self-maintaining, and even commercially paying is to be aimed at.

For this also the staff must be chosen for its integrity and on such fair pay that there will be no temptation to abuse the system of productive jails. It can be done when as now the spirit of co-operative patriotism and human good-fellowship is in the air. It is constructive statesmanship as well as a new spirit of brotherhood which has laid aside in the various governments large sums for the re-building and re-organisation of jails as places where the prisoners can learn a trade and earn money within the jail and get a fresh start in life with kindly sympathy around, and an actual contentment in such well-planned co-operative work in which he or she has had some choice according to powers and taste. Here also comes in the opportunity for teaching arts and crafts of a cottage industry kind which will be followed up and fostered and marketed by the Government when the former offender leaves the jail a person with new self-respect and new capacity.

Why should patriotism and service to the country not be taught in prisons? Why not start teaching Hindi intensively to all who show intelligence in prison to-day and then use them as a nucleus of the great band of teachers who are needed for the drive to make Hindi the common national language? I saw how the women prisoners (non-politicals) could be instructed in First Aid and in Nursing so that they were helpers in the prison hospital. A new Swaraj mentality can revolutionise the whole subject of the reformation of the law-breaker if only the new Ministries will take into their confidence, their exploring conferences, committees and new staffs those amongst the Congress prisoners who were filled with visions of what could be accomplished, and enthusiasm to share in bringing about, and people of spiritual altruistic, humane nature. It needs study, steadiness, emotion and self-sacrifice, but *it can be done*. Let us tunnel this end as well as the prohibition and socialistic end. We are all members one of another and all hang together and are handcuffed together. Let us remove the possibility of such figures of speech by the new spirit of understanding of the sanctity of life and the unity of humanity we will create in Swaraj India.

Thunchath Ezuthachan, the Father of Malayalam Language

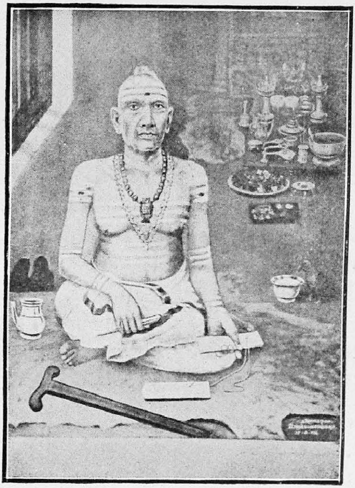
BY M. S. KRISHNA AIYAR

TO all outside of the limited circle of Malayalam readers Thunchath Ezuthachan's is but a name. Only those limited few know that he has a place among the great poets of the world and is verily the father of Malayalam language.

The Hindu mind yearns after spiritual life. It does not find repose in worldly pleasures. Religion is the apex of all the activities of a Hindu. All such activities are only the means to an end and that end is the realisation of the supreme spirit as manifested in the individual self. This ideal found reflected through all the works of Ezuthachan. He never wrote poetry for the sake of poetry. With charm and sweetness he sang; his aim always being to lead man through the right path and enable him to attain liberation. He spent no time in laughter, play or merriment. He never utilised his poetic art except to sing of things divine and nowhere does his poetry reach such high flights as when he expatiates on the immanence of the Lord.

What is Ezuthachan's claim to be called the father of Malayalam language? The poetical works in Malayalam that existed before him had such a large admixture of Tamil that one of them the "Ramacharita" was classed as a Tamil work and not a Malayalam one. Other works that followed the "Ramacharita" showed some improvement in this respect, but none of them could be pointed out as being entirely free from it. To readers unacquainted with the history of the Malayalam language, the language employed in some of these works may even appear to be anything other than Malayalam.

Ezuthachan was the first writer to use the Malayalam language as is spoken and written to-day, entirely free from any Tamil tinge. The modern Malayalam language has



THUNCHATH EZHUTHACHAN

[*By Courtesy, "Guru Matom" Chittur.*]

been entirely modelled and moulded on Ezuthachan's style and hence his claim to the title of being its father. Since his time, Malayalam literature has been developing on different lines, and several changes have also come in; but his style is still accepted as the ideal one and adopted by one and all. In his time there were two distinct modes of Malayalam writing, one couched in torrential Sanskrit and the other verging on erudite Tamil. He abandoned both and laid down a new mode, more useful and pleasing, and more conducive to and in keeping with the indigenous genius of Kerala. Another welcome reform he effected was to entirely give the go-by to the ugly feature of adding Sanskrit terminations to Malayalam roots and using such combinations in verse.

Ezuthachan's next contribution to language reform was the creation of a new set of alphabets. The alphabets in existence in his time were not adequate and distinct enough to cope with the developments that had already taken place, and the changes that he contemplated in the Malayalam language. The scripts used were the *Vattezuthu* and the *Kolezuthu*, they being not very dissimilar to the Tamil script. The liberal use of Sanskrit words brought forth the need for more letters, and Ezuthachan adopted the Sanskrit alphabet as a whole and invented a new script in which to write the same. It is that script that is used to-day in Malayalam.

Kilippattu (the parrot's song), a new kind of verse was introduced by Ezuthachan. What is denoted by the name Kilippattu is simply this, that the poem is put forth euphimistically as the parrot's, the real poet himself keeping behind the screen. A lot of controversy has centred round the question as to why Ezuthachan preferred the parrot to narrate the stories; why he did not put it directly as coming from himself; and why of all the birds he selected the parrot. Rather than enter into this profitless and, what is likely to be, an inconclusive discussion, it is wiser to take refuge under the well known *Asokavanikanyaya* (why Ravana kept Sita in the grove of Asoka trees and not elsewhere). All great poets have given something new

to the world. So this great poet of Kerala sang his immortal verses in a new way through the parrot. Further, the difference of opinion as to the origin or foundation of the Kilippattu need not, and really does not, take away anything from the alluring sweetness of the parrot's song. Ezuthachan adopted Dravidian metres for his composition and this considerably added to their devotional value.

Ezuthachan's works are mostly translations and adaptations; but this does not detract even a little from his right to be placed in the galaxy of the great poets of the world. He has shown what an ideal translation ought to be. His translations are a marvel and excel their originals in several places and ways. He does not translate word for word. He does not hesitate to depart from the original where he thinks he could exhibit his own genius, and in all such cases he has also excelled. Instances where he has corrected and improved upon the original authors could also be easily picked up. Unless one is told beforehand, it would even be impossible to find out by reading those works that they are translations.

Of all the works of this poet "Adhyatmaramayana" is the most popular. It is read, recited and chanted in every Malayalee home. The reason why Ezuthachan took on hand the Adhyatmaramayana in preference to Valmiki, must have been that he was moved more by the devotional value of the former, for it is well known that while Valmiki displays greater poetical art, the Adhyatmaramayana excels the other in its devotional aspect. A traditional story explaining the preference may also be told in this connection.

The author of the original Adhyatmaramayana was very much upset and dejected in mind on his work not getting greater popularity and wider publicity. One day during his peregrinations he met a *Gandharva* (one of a class of demigods), who, out of pity and sincere desire to relieve the poet of his sorrow, pointed out a Brahmin travelling incognito, who he said would be able to help him in the matter, if requested. The author acting upon the

advice achieved his object and thereafter the Adhyatmaramayana came to be more widely read. The Brahmin travelling incognito was no less a person than the saint Veda Vyasa. He cursed the Gandharva who pointed out his identity: —"Be born in the world as a Sudra". It is this Gandharva thus cursed, born in the world as a Sudra that became famous as "Thunchath Ezuthachan".

The Mahabharatha is the very best among the best works of Ezuthachan. This is no translation; only the story is that of the great Epic. The work incidentally throws a good deal of lustrous light into the social and political life of ancient India and contains the essence of all Indian scriptural literature.

Another great work of Ezuthachan is the "Chintaratna", a work on the Vedanta. Tradition has it that this was the *Upadesha* (advice) he gave to his daughter. But whatever that is, he himself has expressed that the work was intended as a piece of advice for the women folk, and for their education. There is not another work on the Vedanta in Malayalam, which is so captivating, elegant and simple. The abstruseness found in most philosophical works is entirely absent here. However unfathomable or abstruse the point may be, it is sublimated and simplified by the absorbing music and sweet diction of this bard. From the milky ocean of his mind enjoying the nectar of *Vairagya* (non-attachment) has evolved Ezuthachan's "Chintaratna" "which shines in the centre of Kerala literature as the effulgent Kaustubha diamond in the breast of the Lord", (poet Vallathol.)

Kaivalyanavaneetham is a companion work to "Chintaratnam," in Kilippattu, and is a translation of a bigger work in Tamil, of the same name, omitting some portions.

"Harinamakirthanam" as its name indicates is a work in praise of the Lord MahaVishnu. The first sloka begins with the first letter of the alphabet and every succeeding sloka begins with the next succeeding letter of the alphabet. This work as every other of Ezuthachan's was intended more to bring light to the common folk than to be presented

to the erudite pandit. One does not notice much of poetic art in this work, but there is in it a sort of literary beauty.

The "Devi Mahatmya" is a work translated in Kilippattu style from Sanskrit in thirteen chapters.

"Irupathinaluvrittam" is an original work in twenty four small parts in different Dravidian metres based on the Ramayana of Valmiki. It is opined by some that this is the first *Mahakavya* in Malayalam and it seems to be modelled on the Tamil *Viruthams.* One of Ezuthachan's early works, this, though not exhibiting the resplendent effulgence of the blossomed poetic flower, at least displays an enchanting poetic bud.

The "Sivapuranam" and the "Baghavatam Kilippattu" are two other works attributed to Ezuthachan. While there is much of internal evidence to show that the former was the work of Kunchan Nambyar, the style of the latter is so ungrammatical and construction loose that it is difficult for one acquainted with Ezuthachan's compositions to believe it was his.

It has recently been reported by a research scholar that he has come across a new work of Ezuthachan, the "Bhavataram", a hitherto unpublished work.

Ezuthachan's life and work are still to a large extent shrouded in obscurity and offers a wide field for research. Few other languages possess such exquisite works as those of Ezuthachan, which creating a heavenly atmosphere, transports the reader to such celestial heights and make him soar therein. As one critic puts it, Ezuthachan has the depth and profundity of Milton, the vigour and straightness of Goldsmith and the loveliness and charm of Gray.

GURU GOBIN SINGH

Guru Gobind Singh

By H. C. KUMAR.

[The first article of this series, published in the 1935 "ANNUAL", gave an account of the Founder of Sikhism, GURU NANAK. The second, published in the last year's "ANNUAL," dealt with THE GRANTH SAHIB, and its Compiler, GURU ARJUN. This one is about the last GURU — GOBIND SINGH, Founder of THE KHALSA.]

For this have I been commissioned to the earth
To establish *Dharma* — (Justice), and
To eradicate Unrighteousness.

In these words does Guru Gobind Singh refer to his mission in the "Vichitra Natak," — the wonderful Drama, an autobiographical sketch of his own life.

The cruelties inflicted on the saintly Guru Arjun by the minions of the Moghal Power, ending in his martyrdom, changed the course of Sikhism. From a quietist religious fraternity, they turned into a band of intrepid champions of Justice for the oppressed, and freedom for the country. "I shall make the sparrows kill the hawk, — then alone shall I merit the name of GOBIND SINGH." This was the vow which the Guru had taken.

Gobind Singh was yet a lad when the hill chiefs of the Punjab came to the Darbar of his father, Guru Tegh Bahadur, to request his help against the oppressions of the Moghal rulers. Guru Tegh Bahadur listened to their long tale of woes, and then calmy remarked: "These troubles will only cease when a great Soul rises to make the supreme sacrifice." "Where shall they find a greater Soul than yourself, dear Pappa?" said the young Gobind, rising in his seat with folded hands. Guru Tegh Bahadur went to Delhi on behalf of the chiefs, and was imprisoned and beheaded by Aurangzeb. The gulf between the Sikhs and the Mussalman rulers became wider than ever. Gobind Singh knew that the struggle was impending, and he set about preparing for it in dead earnest.

Guru Tegh Bahadur had purchased a plot of land in the lower Himalayas, and had built there a fort and a

colony of his Sikhs, called Anandpur, the city of Bliss. Gobind Singh strengthened the fortifications, and began to train his Sikhs in the arts of war. Riding, hunting, archery, shooting — these were his passions. But in archery he had no equal. His example inspired the Sikhs and they vied with one another in deeds of daring. Their presents to the Guru were also made up of warlike weapons, horses and elephants. He had a big kettledrum prepared, and as this was a mark of sovereignty, it created intense jealousy and hatred against him, among the very same hill Rajas for whom his father had laid down his life. Another cause of serious complaint against him was that he had set up a new religion and a new community which despised their ancestral faith and shunned all social relationship with them. How could they allow these things to go on under their very nose at Anandpur?

So they plotted to nip this mischief in the bud. They formed coalitions and combines against him. But every time they were outwitted, every time their plots were frustrated, every time their combined troops were defeated or beaten back by the brave Sikh colony of Anandpur. In this predicament they turned to the Moghal rulers for help. The Guru must perfect his weapon wherewith to fight the mighty Moghal Empire. He created THE KHALSA, just as Cromwell had created his IRONSIDES.

The creation of *The Khalsa* was the master stroke of the Guru's genius. One New Year day, he gathered all his people in a vast assembly. They came from north and south, east and west. He harangued them on the struggle that was imminent. Their loyalty and faith were on trial. At a critical moment during the proceedings, he waved his naked sword over his head, and shouted, "I want Five men to offer their heads for a sacrifice I wish to offer. Who will come forth and give his head?" One man from Lahore, another from Delhi, a third from Dawarka, a fourth from Bidar and a fifth from Jagannath Puri, got up one after the other and were led into a tent nearby. A stream of blood was let out each time, showing that the sacrifice had been offered. There was a tenseness in

the atmosphere. Many thought that the Guru had lost his wits. Just then the Guru emerged from the tent, and brought the "Five Loved Ones" out with him, dressed in clean linen, and in the presence of the assembled multitude administered to them the *Pauhl*, or baptism with the sword, saying, "Guru Nanak found only one true Sikh in all his life, Bhai Lahna, later called Guru Angad. I am more fortunate, I have found Five. They will be the foundation stones of the KHALSA BROTHERHOOD, which will fight the war of Justice (Dharma) and Freedom against the tyranny of the Mussalman rulers."

The orthodox Hindu Rajas of the hills and the Moghal Governors of Lahore and Sirhind led their combined armies against the Sikhs. Anandpur was invested and a long siege followed. The Sikhs performed wonderful feats of bravery and covered themselves with glory against tremendous odds. At last they were reduced to semi-starvation and even their water supply was cut off. The Guru's mother interceded on their behalf, but the Guru turned a deaf ear to their entreaties to surrender. Failing thus to secure their objective, the hill chiefs devised a strategem. They sent envoys accompanied by the most solemn symbols of Hinduism and Islam, to assure the Guru that if he would evacute Anandpur, safe conduct would be given to all the garrison, and no harm would be done to any of his men. The Guru knew their real designs, but as his mother and many of the Sikhs in the camp were losing all their patience, he had no alternative but to yield. The result was disastrous. The Sikhs were scattered like straw before the wind. The Guru's mother with her two young grandsons, fell into the hands of the Guru's inveterate enemy Wazir Khan, the Governer of Sirhind. Wazir Khan offered them free pardon if they would embrace Islam. They spurned the offer indignantly, as unworthy of consideration by the sons of Guru Gobind Singh. Sucha Nand, a Hindu courtier, who had an old grudge against the Guru, said they were the offspring of a cobra and must be killed. The Mohammadan Nawab of Malir Kotla, on the other hand, pleaded their innocence. But it was all in vain. Both the children, aged

nine and seven respectively, were put to a cruel death, and the old grandmother died of the shock.

The Guru himself was separated from his family. Arrived at a place called Chamkaur, he had only 40 Sikhs with him, and the treacherous enemy was close on his heels. He turned a garden house of a Jat into a sort of a fort, and was surrounded by the enemy host. His eldest son, Ajit Singh and the younger, Zorawar Singh, performed prodigies of valour, and both lost their lives. It was a case of forlorn hope, but the Guru was fully equal to it. He made good his escape at night and became a wanderer, driven from pillar to post, receiving unexpected help from Mohammadans, and betrayals from his own men. It was during these wanderings that he received the news of the cruel fate of his little darling children at the hands of the Governor of Sirhind. At the same time came the news of the illness and subsequent death of Aurangazeb, who had broken his plighted word on the Quran with him and had been the cause of all his sufferings after the siege of Anandpur.

On the death of Aurangzeb there was a brief struggle between his two sons, Tara Azim and Bahadur Shah. Bahadur Shah asked for help from the Guru, which was given. So when he got the throne of Delhi after defeating his brother, he became friendly to the Guru. But he had not the courage to mete out the desired punishment to the Governor of Sirhind, and the Guru at last parted company with him at a place called Nandher, in Hyderabad Deccan. Here he commissioned a Bairagi, afterwards called Banda, to go to the Punjab, gather the Sikhs in his name, and punish his enemies. Banda carried out his work with the fanatical zeal of a new convert, and laid the country waste with fire and sword. Wazir Khan of Sirhind was put to the sword, and the city was reduced to ruins. Thus did Nemesis overtake the enemies of The Khalsa. But it was long before they were able to retrieve their position and carve out a kingdom in the Punjab under Ranjit Singh, the Lion of the Punjab. For the time being, their Guru was in exile, where he died a year later in 1708, and their cause lay trampled under feet.

Is there no Justice in the World? asked Carlyle, and gave the following answer :

" In this God's world, with its wild, whirling eddies and mad foam oceans, where men and nations perish as if without Law, and judgment for an unjust thing is sternly delayed, dost thou think that there is therefore no Justice? It is what the fool hath said in his heart. It is what the wise, in all times, were wise because they denied and knew for ever not to be. One strong thing I find here below, the Just thing, the True thing."

Guru Gobind Singh was greater in arts of Peace even than in those of War. He was a deep and wide scholar of Sanskrit and Persian. He was a great patron of arts and culture, and had as many as fifty-two bards of various castes and creeds in his Darbar. He was a great and forceful poet himself, and inventor of the *Swayya* form of verse. His Vani, or compositions, are charged with power and reverberate with life and vigour. He cuts with his words as he used to cut with his sword. He got many stories from the Puranas translated into Hindi, and they all find a place in his "Dasham Granth," the Scripture of the Tenth Guru. Among others, there are stories of the chief *Avataras*, like Ram and Krishna, and also folk-tales called "*Triya Charitra*," or Stories of Female Wiles. I wonder why most modern Sikhs seem to regard them as derogatory to Sikhism. To my mind, they indicate the range of culture and of deep human sympathy on the part of the great Master of their *Panth*. The misconception arises because people think that everything that is chronicled in a Sacred Granth, is an object of worship which, of course, is not so. Let us study them as objects of human interest and culture, and no difficulty will arise. There is much room for research work in Sikh history and literature, but there are at present very few labourers in the field.

As the pages of our histories are filled with wars, and as the stories of the persecution of the Sikhs at the hands of the Mussalmans are repeated from religious platforms in the north, year in and year out, people are apt to jump to the conclusion that Guru Gobind Singh was born to re-establish Hinduism and to extirpate Mohammadanism.

Nothing could be farther from truth. As the Guru himself said, " he had come to establish *Dharma*, i. e. Righteousness, and to eradicate *Adharma*, i. e. Injustice, both in Religion and in Politics. So it was that the root-cause of his trouble were the Hindus first, and the Musssalmans afterwards. So it was that he had friends and enemies both among the Hindus and the Muslims. It was at the instance of a Hindu, Sucha Nand, that his little innocent children were butchered in Sirhind, and it was the Mohammadan Nawab of Malir Kotla who pleaded for them. After the battle of Chamkaur, it was two Mohammadans who helped in carrying his litter on their shoulders, and it was a Sayad (Mussalman) who saved him by declaring that he was the Pir of Uch in the Punjab, and not Gobind Singh. Saiyad Beg, who held the command of five thousand horse under the Moghal Empire, in spite of heavy bribe offered to him by the Guru's inveterate enemy, Raja Ajmer Chand of Bilaspur, threw in his lot with the Guru and remained faithful to him till the end. Such instances could be multiplied *ad infinitum*. The truth is that the Guru wanted to establish a religion of One God of Love, bereft of all superstitions and hypocritical practices, and also to eradicate the tyranny practised by the rulers of the country on their subjects, and so it was that both orthodox Hinduism and bigoted Islam made up their minds to crush him, and carried on a relentless war against him. Even in the thick of a battle, he would give the first chance to his enemy, and always fought on the defensive.

Numerous passages may be quoted from his *Vani* showing his catholic outlook on religions and religious diversities :

> The Temple and the Mosque are the same ;
> The Hindu worship and the Muslim prayer are the same;
> ALL MEN ARE THE SAME,
> It is through error they appear different.

All men have the same eyes, the same ears, the same body, the same build—a compound of earth, air, fire and water.

ALLAH and ABHEKH are the same, the Purans and the Quran are the same. They are all alike, it is the One God who created them all.

In his "AKAL USTAT", the Hymn to the TIMELESS, Guru Gobind Singh has painted magnificent pictures of the Power and Glory of GOD:

> His glory is inexpressible. He is from the beginning.
> He is unassociated, imperishable, imperceptible and unestablished.
> I bow to Him as One. I bow to Him as One.
> God ever cherisheth the poor, saveth saints, and destroyeth enemies.
> Compassionate to the poor, an ocean of mercy, He beholdeth man's sins, but wearieth not of giving.

Here is an exquisite poetical piece in the truest sense of the word:

> Like milk in Chirawadh, like buttermilk in Chatraner, like moonlight on the banks of the Jamna.
> Like a famale swan in Turkey of the Shias, like a diamond in Husainabad, like the stream of Ganges when it blendeth with the seven seas,
> Like quicksilver in Palaugarh, like silver in Rampur, like saltpetre in Surangabad,
> Like the the champa flower in Chanderiket, like moonlight in Chandargarh, THY PRAISE FLOURISHETH LIKE THE MALTI FLOWER.

As said above, the Guru was a great scholar of Persian, too. His letter of indictment to Aurangzeb, called the "Zafar-Nama," the Epistle of Victory, is a classic example of his erudition and also of his unconquerable spirit. Here is a piece:

> Did I not know that *thou*, O faithless man, wert a worshipper of wealth, and perjurer? Thou keepest no faith and observeth no religion. Thou knowest not God, and believeth not in Mohammad. Wert thou to take a hundred oaths on the Quran, I would not even then trust thee in the least.

Minerals in Human Nutrition

BY K. V. GIRI, B. A., M. Sc., A. I. I. Sc.

INCREASING attention is now being paid to the study of the food requirements of man in every civilised nation. In addition to carbohydrates, proteins and fats, which are concerned with the upkeep of the tissues and with the supply of energy, certain minerals are indispensable for the building of bone, teeth and tissues of the body and for the formation of haemoglobin in the blood. Our bodies are built of the elements which compose our diets and likewise our bodies break down when essential elements are absent from our diet. The diet may contain all but one of the required constitutents, yet if it is deficient in that one, no matter how small in quantity it may be, we are made to suffer. The function of the mineral elements in the body are manifold. They regulate all chemical processes, and maintain the acid base balance and osmotic pressure. It is stated that "of the fifteen chemical elements which enter into the composition of the body, and are recognised as being essential, ten are mineral elements, and each of these ten is known to perform functions which cannot adequately be performed by any of the others. As all these minerals are continually being lost from the body in the excretions, and all are required as constructive material in growth, it is obvious that the mineral content of the diet is of primary importance for the physiological well-being of the body". When we speak of elements as being essential for body growth, we do not mean the element in the free state. Some of the elements are poison in the free state. Phosphorus as an element is a poison. We know that phosphorus poisoning is very common in match factories. So these elements are utilised only when they are present in chemical combination with other elements. Amongst the elements some occur only in traces, while others are present in large amounts in the body, and of these sodium, potassium, calcium, magnesium, iron, phosphorus, sulphur, chlorine and iodine are of particular

interest and importance from the point of view of human nutrition. From the dietetic point of view minerals, which are likely to be a shortage, are of great importance. Calcium, phosphorus, iron and iodine belong to this category, and in India particularly these elements are likely to be deficient in foodstuffs. A deficiency in the intake of these minerals brings about certain types of diseases, like rickets, anemia, general weakness and other pathological derangements. A careful survey of foodstuffs usually consumed by people of every civilised nation, with respect to their availability of minerals is, therefore, the most important item in nation building.

Calcium and Phosphorus :— The role of calcium and phosphorus in the diet has long been recognised as of primary importance. They are present in bone, teeth and every tissue of the body. The skeleton contains 97 per cent. of the total calcium of the body at all ages. The bone largely consists of a substance known as calcium phosphate, which contains calcium and phosphorus. Thus these elements are very necessary for the building and formation of bone in the body. Another important function of calcium in the body is in the coagulation of blood. It is a well known fact that when there is a cut on the skin blood comes to the surface and it continues to flow for some time and then stops altogether, and forms a clot. This clotting is impossible in the absence of calcium. It is indispensable for the normal working of the heart, muscle and nerves.

In recent years special attention is devoted to our requirements of calcium. Children require more calcium and other minerals than adults. Expectant mothers and nursing mothers require a large intake of calcium. The calcium contained in the bone of children is obtained from its mother's blood and milk. If, the mother's diet is deficient in calcium the calcium contained in her bones is drawn upon, and the health of the mother and child will suffer. In order to prevent this enormous drain of calcium during pregnancy and lactation large amounts of food materials which contain calcium should be taken.

The adult man should have at least 0·45 gram of calcium intake per day, and safety demands a standard of 0·68 gram. Does our Indian diet supply this amount? This element is very much lacking in Indian diets to-day. Indian diets, particularly diets based on milled rice, may supply less than 0·20 gram of calcium daily. This intake is too small. Further the diet of growing children should contain upwards of 0·60 gram of calcium (at least 1 gram a day) daily and that of pregnant and nursing women rather more.

The best source of calcium is milk. It occurs also abundantly in green vegetables. Amaranth, curry leaves, fenugreek and drumstick leaves are the best sources of calcium. Since calcium is generally lacking in Indian dietaries, it is, therefore, necessary to use liberally vegetable together with a liberal supply of milk.

Phosphorus is an equally important constituent of bone, teeth, nerves and other tissues of the body. The phosphorus compounds contained in food-stuffs are utilised mainly for structural purposes, in the building of bone and supporting tissues. A deficiency of phosphorus is followed by the production of rickets and other disorders of the bone and teeth. The prevalence of diseases which affect the bone, such as rickets and diseases of the teeth, are very common in India. It is stated that rather more than 1·0 gram (1·32 grams) of phosphorus daily should be supplied by diet for normal growth. Recent researches have shown that the absolute amounts of dietary calcium and phosphorus are as important a factor in the production of rickets as in the distortion of the optimal dietary ration of these two elements (calcium : phosphorus = 2:1 and 1 : 2). Therefore, the amount of phosphorus that we can use and need is conditioned by the amount of calcium in the diet. With a low intake of calcium, excess phosphorus may produce serious disturbances in the way of acidosis and other pathological effects. Now considering the mineral composition of Indian foodstuffs, only a very few contain mineral matter having approximately the proper ratio (Calcium : phosphorus). Rice is comparativley high in phosphorus

and very low in calcium. In Southern India where the diet of the masses consists largely of rice, there is a great tendency for the diet to be unbalanced and to contain an excess of phosphorus. This unbalanced ration may be balanced to a certain extent by supplementing the diet with vegetables that have a relatively large amount of calcium. Some vegetables (Amaran, coriander, curry leaves, drumstick, fenugreek, and cluster beans) are comparatively high in calcium and low in phosphorus. This unbalanced ration between phosphorus and calcium is just the opposite of that in rice. The addition of such vegetables, therefore, to a diet consisting largely of rice would tend to balance the calcium-phosphorus ratio in the rice.

Although cereals are fairly rich in phosphorus, considerable loss of this element occurs on cooking. Boiling vegetables and cereals in water removes most of these valuable salts, from which it is obvious either that water in which they are boiled should be drunk, or used for the preparation of soups, or else that the vegetables should be steamed. Rice is generally cooked with comparatively small amounts of water, and the surplus water which is known as 'Conjee' is either fed to cattle or thrown away. Poor people, however, cook rice with a large excess of water, and after cooking both the 'conjee' and rice are consumed. Rice is first washed with water and then cooked. It has been found that during washing, most of the phosphorus is lost, while the loss of calcium is not appreciable. In the case of rice of poor quality, which is largely consumed by the poor, more washing is necessary, and in such cases the loss of phosphorus is very considerable. The need for knowledge of the losses occurring in such culinary practices, needs no special pleading.

It is necessary to remember that the degree of absorption of these constituents into the body is dependent on the form in which they are supplied. For example, it has been observed that the calcium of spinach is not available, while that of carrots and milk is utilised completely. The poor utilisation of calcium of spinach has been attributed to the presence of large amounts of oxalate, which interfere

with calcium availability because of the insolubility of calcium oxalate. It is now definitely established that calcium availability is interfered with by oxalates. These findings suggest, therefore, the necessity for undertaking a comprehensive survey of the occurrence of oxalates in Indian foodstuffs and their effect in the diet.

In recent years it has been realised that the phosphorus in the food may be divided into two classes, depending on its availability for nutrition. Phosphorus is present in foodstuffs in part in the form of phytin (a compound of phosphorus), and this phytin phosphorus is not available for nutrition, because it passes through the intestine unchanged and does not serve as a source of phosphorus to the body. All other types of phosphorus compounds present in foodstuffs except phytin are well utilised by the body. Cereals, nuts and legumes contain phytin in large amounts (50 to 80 per cent.). The phosphorus of such foodstuffs is not available for nutrition. The writer has recently undertaken a survey of the phosphorus availability of Indian foodstuffs, and the findings show that in Indian diets, phytin phosphorus forms a very large percentage of the total phosphorus. We derive a very large part of our phosphorus from cereals (rice, ragi etc.), which contain phytin to the extent of 50—70 per cent. Therefore a large part of phosphorus in our foodstuffs is not available for nutrition. It is necessary to include in our diet, vegetables and green leaves, which contain phosphorus in a form which is completely available for nutrition. The behaviour of vegetables and cereals shows that mere quantity of intake of phophorus is not the sole determinant in the choice of foods as phosphorus supply. Quality of source is a factor in phosphorus utilisation.

Iron and Copper:— Iron is a very important food constitutent. The total amount of iron present in our body is very small. It is present in such low concentrations as 0·005 per cent of the body weight. Two-thirds of this amount is present in the haemoglobin of the blood, and the remaining portion is distributed amongst other tissues like liver, kidney, spleen etc. Iron is an indispensable element

for the formation of red pigment of the blood. The red pigment is known as 'haemoglobin', which is composed of a colour-bearing portion and a protein. The coloured portion is known as haematin which consists of iron and two portions of a colour substance called haematoporphyrin. Haemoglobin takes oxygen from the air in the lungs around in the blood to the tissues and the oxygen is attached to the iron. Without iron haemoglobin cannot be formed and oxygen transport is hindered.

The iron required by the body must be obtained from our food, in sufficient amounts which would supply the optimum needs of the body for blood formation and normal metabolism. It has been estimated that an adult requires about 10 to 20 milligrams of iron in a daily diet that is adequate in other respects. Deficiency of iron causes chlorosis, which is a form of anemia. In chronic malaria and hook-worm disease, there is always loss of blood corpuscles, and in such cases iron requirements are increased. In the case of women it has been estimated that 34 to 42 milligrams of iron is lost each month in normal menstruation. Quite apart from the extra demands of pregnancy and lactation, a woman must take sufficient amount of iron in her food to make good this loss, and it is reasonable to suppose that women of child bearing age require more iron than men. Pregnant women invariably suffer from anemia. It has been suggested that iron medication is more effective than the consumption of a diet containing abundant iron, in the treatment of certain forms of anemia.

From time immemorial, iron has been one of the most important therapeutic agents in Hindu medicine. Preparations of iron have been extensively used in combination with other compounds containing vegetable drugs, spices etc. in the treatment of different diseases. *Lauha Bhasma*, an iron preparation, which is prepared by elaborate methods testifies to the knowledge possessed by our ancient Hindus, of the physiological effects of iron in the body. They knew that iron should be administered in an assimilable form. The preparation is in the form of a

very fine powder, for in such a condition it could be easily acted on by the gastric juices and absorbed without difficulty and at the same time it produces very little irritant and astringent effects on the gastro-intestinal tract. The preparation is mainly employed in the treatment of anemia and debilitating conditions. In recent years the role of iron in the treatment of anemia is very well understood and there are now excellent preparations in the market available for therapeutic purposes.

Regarding the iron content of foodstuffs, meat, liver and eggs are good sources of iron. Of all the vegetable sources spinach and amaranth have been cited as the best to date. Milk contains very little iron — an important point to remember in certain diets consisting largely of milk.

The phosphorus and calcium history is repeating itself in iron utilisation. Here again the form of the iron in the food source profoundly influences the body's ability to utilise iron. The iron in foods is present partly in inorganic form and this iron is easily available for nutrition. Part of the iron, however, is combined with pyrrole derivatives, and it is not set free in the intestinal tract by the digestive juices. This iron, passes through the intestine unchanged and, therefore, is less available. It has been shown that the availability of iron in foods may vary from 25 to 80 per cent of the total iron content. A high percentage of iron in pulses and meat is available, while the availability of iron of certain vegetables (spinach, lettuce) is very low. It is, therefore, impossible to evaluate foods as a source of iron in the diet upon their total iron content, without knowing the extent of its availability for nutrition. It would be useful to investigate thoroughly the availability of iron in Indian foodstuffs.

Copper:—Recent researches have shown that copper is an essential element in nutrition. Since it is now established that copper is necessary as a supplement to iron for haemoglobin formation, serious consideration should be given to the relation of this element to the treatment of anemia. Iron and copper given in combination are found to be more effective in the treatment of nutritional anemia

in children than iron given alone. The diet for children of pre-school age should contain not less than 0·1 milligram of copper per kilo body weight. Many diets may not supply this amount of copper, and all the copper in food may not be available. All foodstuffs contain copper in varying amounts. The foods can be classified in descending order of copper content as follows: nuts, dried legumes, cereals, animal tissues, green legumes, roots and tubers, leafy vegetables and fresh fruits. The copper content of milk varies from 0·051 to 0·132 parts per million. It is worth while investigating whether copper deficiency does play any important part in common nutritional anemia of children in India. In view of the latest researches in the treatment of anemia, it can be said with certainty that iron accompanied by small amounts of copper should be used in all cases of anemia showing reduced ability to form haemoglobin. The use of tablets containing ferrous sulphate and copper sulphate in the ratio 100: 1, has been suggested for the treatment of anemia. Copper has also been used in the treatment of diseases such as tuberculosis, leprosy etc.

Iodine:— Iodine in minute amounts is necessary for normal nutrition. Part of the iodine is used for the synthesis of the hormone, thyroxine, which plays an important part in the regulation of metabolism. A deficiency of iodine in the food causes coarseness of the skin, loss of hair, dullness of expression, mental deficiency, mutism and cretinism in children. Such disturbances observed in human beings are associated with the thyroid gland, which controls the iodine exchange of the body. About 66 per cent of the thyroid gland is a pure organic iodine and there is no inorganic iodine in the thyroid. This gland depends for the supply of iodine on the iodine in the diet. Lack of iodine in the diet, therefore, brings about a disturbance in the thyroid gland and a disease known as goiter ensues. It is often said that "the age of man depends upon the quality of his thyroid gland". It is now well known that in those cases where endemic goiter is common the intake of iodine is low. The deficiency of iodine in our foods is therefore, an important point to be considered. This

deficiency in iodine can, however, be prevented by adding to the diets a daily quota of iodine. The addition of iodine to the water and foodstuffs is an important therapeutic measure. Recently, it has been shown that inorganic forms of iodine (potassium and sodium iodides) are unsafe in anything but small amounts and they are never used or referred to as food. The iodine in vegetables and fruits is iodine in organic combination. This form of iodine is known as 'Organic iodine' to distinguish it from inorganic forms of iodine. Iodine in organic form is a food which may safely be added to other foods in any desired amounts. Organic iodine is available in large quantities for addition to various forms of foods and mass iodisation is thereby rendered possible.

These examples not only indicate a great need for attention to food selection from the view-point of optimum mineral requirement, but also know that the elements are present in an available form in the foodstuff. The problem of mineral metabolism in the body is very complicated and it is very difficult to state a means of food selection that will cover all the conditions of the individual consumer. In India the problem of devising satisfactory diet is still complicated, for we know very little about the availability of all minerals in Indian foodstuffs. Further the standards put forward by other European countries may not be applicable *in toto* to India. It should be remembered that to merely prescribe the quantity of minerals needed and to purchase food that contain that amount is not the sole procedure necessary to prevent mineral deficiency. We must also know the mineral availability of foods. But experience has shown that liberal amounts of fruits, green vegetables and the more important item milk in the diet will usually maintain a good content of minerals in the body and blood. The facts enumerated above are valuable, but we still have to learn much more about our foodstuffs before we can make our selection of food materials with scientific certitude.

Common Sense

By TANDRA DEVI.

IMMORTALITY is not a state which we attain by dying but it is attained by putting off mortality whilst yet living.

The real fight in the world to-day is not between Communism and Fascism, Socialism and Conservatism; it is between greed and selflessness, worldliness and other-worldliness — the struggle of the ages between the primal forces of good and evil, light and darkness. On both sides, among the present-day combatants, are ranged the self-full and the self-less; and the real fight runs *through* the ranks of the opposing armies, not *between* those armies, whatever appearances may seem to show.

Thus, the whole problem is brought back intimately to the individual and the salvation of the world lies with units, persons, not with armies, organisations.

The holy man, teaching his disciples in some forgotten corner, may, therefore, be the real Dictator to be feared by all the Powers That Be: for he is a conqueror of factions, and so, a Supreme force. Yet he is powerless. He has become a child. He looks with equal eye upon the communist and the capitalist, the socialist and conservativist. He regards essentials, which in individuals are summed up as character, motive and action. "By their works ye shall know them" -- not by their corporate achievements but by individual deeds. True individualism (not ego-centricity) is the one solvent of present chaos; people are realising this more and more. Thus is the ancient ideal justified in our day — that the liberation of the world lies in the illumination of the individual.

To put off mortality is to become fearless in the light of one's own Self. Such fearlessness, which is the easily-worn armour of the selfless, may not, perhaps, thrust all material obstacles from our paths. But it thrusts all

psychological obstacles from within ourselves, and so, ultimately, it must conquer all external disharmonies. For the world without is but an effect of the world within. A nation of saints could conquer the world, if only because they would not try to conquer it! The individual who has found immortality is a conqueror because he doesn't care if he wins or loses. "Caring" is the great weakener.

There is a sense common to all, irrespective of parties and partisans: the Self sense — the inmost "you" or "I". This the "Common Sense" the basis of life, and the goal. People blur the reality by defining it. Krishna and Christ and Buddha and Mahommed didn't do that; but disciples are rarely able to be true to their Masters.

Unearth the individual and one finds this Common Sense. Common Sense will give peace to the weary world. It is unity, because "common". It is immortal, because simple, the Self-ness of a man in whom mortality is ended. When social, political and business relations are conducted on the basis of this Common Sense, the millenium will be here.

"A Sound Human being in a Sound Society"

BY G. F. ANDREWS, M. A., Ph. D.

WE are familiar with the adage "a sound mind in a sound body". In a system of education which over-emphasised the intellect at the expense of the physical body, the re-iteration of this statement was well worth while. In this country it seems still worth emphasising the ideas embodied in it because we are not yet out of the woods of intellectualism, of examinations and of degrees secured through examinations.

But, changes in the educational system are prognosticated and a new outlook on society is envisaged in acts of governments like the Prohibition Bill of the Madras Government, the Temple Entry Proclamation of the Travancore Government supported by the Azhuvancheri Thampurakkal and so on. Committees for the re-organisation of education—elementary and secondary—have been constituted and through the press and the platform we are being told as to the lines on which changes in Education should proceed.

Education as the hand-maid of society indicates the trends of thought of society and seeks to indoctrinate the young along these lines. The present-day aim of education needs, therefore, to be stated. May not the title of this article-" A Sound human being in a Sound Society"- be an apt one?

Speaking of rural reconstruction the other day, Dr. D. Spencer Hatch of the Marthandam Y. M. C. A. Rural Reconstruction centre said that rural reconstruction was intended to bring about a complete upward change for rural people, spiritually, mentally, physically, socially and economically, thus bringing a more abundant life on all sides of life to all people of the rural areas. Should not educational reconstruction also think of the child in a similar way, as a whole living organism, gaining from the

experience of life day by day amidst the society in which it is thrown, as one whose faculties are not compartmentalised, but closely integrated with each other, acting and reacting upon each other? Is it a sound mind in a sound body that should be developed or is it a sound body, a sound mind, and a soundness in all the aspects of one's personality functioning in close relationship and entire harmony with each other that is of the utmost importance ?

Physical education was at one time considered to be concerned with the body and its development, a hindrance rather than a help to intellectual, moral or spiritual growth. With the advent of the programme of natural play activities, as opposed to the artificial systems of exercise and "physical culture", this excessive emphasis on the "body beautiful" is gradually receding to the background. The emphasis now is on such results as organic vitality and endurance, naturally developed physical skills, keen and alert mental functions, conduct traits and habits of value in the development of a morally and socially conscious and sensible human being, etc. which will enable the individual to live the abundant life.

"A sound human being in a sound society". This aim of physical education or of education is not easy to realise until the society which provides the education is conscious of this need. The individualistic philosophy of India has created a society wherein the self dominates with its all-consuming desire of attaining spiritual bliss and freedom from the trammels of the material life. The impact of democracy and the responsibilities following in its train, have awakened this society to its most pressing needs. The soundness of the new educational system and the evolution of sound human beings living best and serving most in a sound society depends on this newly awakened society.

A Retrospect of Indian Womanhood

BY Dr. (Mrs.) N. LAKSHMI DEVI, L. C. P. S., M. L. A.

THE world is undergoing rapid changes and particularly India, which is a subject nation, has undergone various changes so rapidly that it would be an uphill task to take stock of all these changes. The India of to-day is not what she was two decades ago. Her vision and outlook has undergone rapid changes, placing her on the onward march for complete independence. With the growth of the Indian National Congress the country has been rejuvenated politically, economically and socially.

Another well-recognised institution deserving mention to-day is the All-India Women's Association which has spread country-wide. A group of women, like Dr. S. Muthulakshmi Reddi, Mrs. Sarojini Naidu, Mrs. Ammu Swaminathan and many others are the pioneers of this movement for which they are working still. In connection with the Indian women's franchise the All-India Women's Association sent a deputation to wait on the late Mr. Montague, then Secretary of State for India, who visited this country, and conferences were organized all over India in support of it. When the Montague-Chelmsford scheme of reforms for India was published, women were left out of the reforms scheme. When the South Borough Committee came to India in connection with the reforms scheme the A. I. W. A. made representations with many other sister organisations and again the result was not encouraging. In 1919 the A. I. W. A. decided to send three prominent ladies,

Dr. Annie Besant, Mrs. Sarojini Naidu and Lady Tata to England to speak to the British public on the question. As a result of the propaganda set afoot, the Women's Movement in India gained good momentum and a deputation led by Lady Sadasiva Iyer waited upon Lord Willingdon. Eventually in 1926 Indian women were given the right to enter the legislature. Dr. Muthulakshmi Reddi is the first Indian woman to enter the Legislative Council in British India. She devoted a good deal of her time towards the cause of Indian women. She suceeded in her efforts to get equal rights for women in several respects. A large number of women threw themselves heart and soul into the national struggle initiated under the great leadership of Mahatamaji, rising to the occasion. In 1929, for the first time, a band of Indian women came out and courted arrest in connection with the boycott movement. Prominent among them were Mrs. Sarojini Naidu, Mrs. Kamala Devi, and Mrs. M. E. Cousins, who has played a prominent role in the emancipation of Indian women.

In the recent general elections under the new Act, women contested in large numbers for the seats and in the six Congress Provinces lady members occupy responsible seats. In the U. P. Mrs. Vijayalakshmi Pandit is in the cabinet, in Bombay province Mrs. H. Mehta is parliamentary secretary and in Madras Mrs. Rukmani Lakshmipathi is the Deputy Speaker of the Assembly.

The retrospect of the women's movement in India in the recent past and the rapidity with which the movement gained momentum impresses one of the immense possibilities for Indian Womanhood in future. If women claim equal rights with men, they should throw in their lot in an equal measure with men in the national struggle for freedom and further should strive hard to serve the country in all spheres, with the common weal as the ulterior goal.

Woman's Role in Public Life

BY SRIMATHI M. SHANTA BAI.

IN determining the function of women people begin with postulating certain self-imposed or super-imposed theories of woman's life. There was a time when tradition and time-honoured customs defined the mould of women's life. Now has come a wave of imitating man, who is dominating to-day's world on account of certain privileges and rights he enjoys.

Neither this imitation of man nor the traditions nor extraneous theories about woman's life are really useful in determining her functions. As matter of fact, there cannot be any fixed programme of her life for all time to come. Her activities will be changing as our knowledge increases.

The fundamental guiding factor is the biopsychical and physiological nature of woman. From this basic nature are to be deduced the functional peculiarities of women. I am afraid this itself may be taken as a self-imposed theory. But if at all this is a theory, it is not a mechanical one. It is capable of growth and development in all

possible directions varying as our knowledge of nature, biology and physiology.

Though it is not possible to earmark the psychological tendencies by meters and bounds and to delimit them to man and woman, the following seem to be the dominant tendencies determining the functional peculiarities of women based on biopsychical and physiological considerations.

If we trace the evolutions of sexuality, it will be found that in higher forms of life, the male and female beings are ineradicable. No amount of biassed logic nor argumentation can eradicate the differences; but these differences need not be confused with the ideas of superiority and inferiority. They are in no way inconsistent with the claim for spiritual and social equality between man and woman. The evolution of sexuality has made pregnancy and motherhood the special responsibility of woman between 18 and 40.

Secondly, the self-regarding and race-regarding emotions, both of which are so very vital for development of life, cannot possibly develop together in one and the same individual. In the course of the natural evolution, therefore, these two tendencies seem to have been separated except to the extent they can possibly exist together. The woman seems to develop the race-regarding tendency more than the man, who is interested in the growth of self, predominantly. In the work of propagation and preservation of the race, the woman plays a vital part, while the man's part seems to be only incidental though necessary.

Thirdly, compassion, mercy and love as against the harsh justice of man, seem to be dominating woman's life. As such biology, religion, mysticism, literature, arts, etc. seem to be suitable pursuits for her. She will be more inventive and ingenious in these fields. Intuition, like instinct, is concerned with practical life than with theories. Again on account of her physical delicacy and endurance she seems to be fit for continuous low pressure work. She can be very skilful in manual labour, scientific experiments and handling of delicate machinery. Lastly, as the

grey matter of the brain is diffused in the nervous system of the woman, she is endowed with less will-power but more emotion. She, therefore, entirely gives herself up to love and ideology of life while man uses them. The above seem to be the fundamental difference between man and woman.

But they are only tendencies and not the exclusive quality of any one sex. It is not possible to mention specific functions of the two sexes with the same exactitude as we can say about pregnancy and such like visible differences. The natural tendencies have in the past deviated so much from their normal course that it is difficult to find out a natural woman or a man. Conventions, social ideology, economic systems, man's physical force and such like causes have produced various moulds of women. Such moulds must be first discarded and much of the old wisdom and knowledge must be unlearnt with a strong sense of freedom of thought and action.

But there have already begun to work certain economic and social theories which seem to develop woman to her full stature and to emancipate her to play her role fully. As long as woman's economic freedom consisted only in her clamour for more wages and service facilities, she could never attain economic equality with man. Recognition of women's rights to earn cannot overcome the natural hindrances and secure for women equal opportunities. The old economic order itself was fundamentally wrong. An ideal motherhood can have no economic value, while the race—destroying business in arms and ammunitions is thriving headway. With the advent of socialism abolishing private property, distributing the national wealth equally and providing the life's necessaries, the woman's position will be safe and free from the thraldom of social inequalities. Man's physical power and force is already being replaced by machinery. He cannot domineer over woman if she is economically free and is conscious of other political and social rights. The idea of socialisation of domestic drudgery is also gaining ground. Instead of making cooking arrangements in every house, it

is far more advantageous and economic to have common kitchens managed by experts in dietetics. Similarly, to have common nurseries, training homes for children above the infant age of breast-feeding will also give immense leisure to womanhood to play her natural role in shaping the destiny of this world.

The activities of woman's life may be roughly divided into three periods. The girl-hood till 20 is the period of physical, physiological and psychic growth. During this period nothing concrete need be done by her. It is a period of *brahmacharya* or preparation for future life. Then follows the period of wife-hood, glorious motherhood till 35 or 40. This is also the period of maturation and civic growth. Lastly comes the period of womanhood, mature and fully developed to the service of humanity in all spheres of life. We lived in the past in the man-made civilization of self-regarding egotism -- individual and national — leading to imperialism, exploitation of the weak and destructive wars. With free women out for service will be ushered in an era of internationalism, common human welfare and common prosperity and peace.

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The Basis of Political Obligation in Ancient India

By Dewan Bahadur K. S. RAMASWAMY SASTRI.

THE magical word Dharma is at once the key of the individual life, and the social and economic and political life, and the artistic and religious life, of India. From the political point of view, the State must subserve Dharma, and Dharma protects the State. Loyalty to the State is thus eventually loyalty to Dharma. It is the State that guarantees to each man to deserve his Dharma duly and without obstruction and such observance of Dharma by him is the *sine qua non* of the salvation of his soul. The Jain author Somadeva's Nitivakyamrita says: "Atha Dharmartha phalaya rajyaya namah" (i. e. Therefore, let us bow to the State whose fruit is righteousness and wealth.) We may, in fact, go further and say 'Atha Dharmarthakamamokshaphalaya rajyaya namah.' The principle of the unity of all life was the keynote of Indian thought and was as much the vital point of political theory and practice as of other aspects of life.

It is usually said that the Hindu mind preferred order to progress and sanctified the existing institutions and especially the caste system instead of allowing institutions to improve while preserving them. But, in the best periods of Indian history, order and progress were harmonised and the caste system was a nexus of duties and interdependent life and mutual service. The political institutions of India when she was at the height of her self-expression subserved the purposes of order as well as progress, though in times of her devitalisation the same power of fusion of both the principles of life was not seen.

It is well known that the Hindu Pramanas tell us that *Trayi* (Vedas), *Anvikshaki* (Vedanta philosophy), *Varta* (Political Economy) and *Dandaniti* (Political Science) should be studied by all thinkers. Out of these a high place is accorded to Political Science, as it is the real safeguard and protector of all aspects of Dharma. In Kautil-

ya's Artha Sastra it is expressly laid down that on Danda depends the well-being of *Anvikshaki* and *Trayi* and *Varta*. The Mahabharata attaches great weight to *Danda* and says that it is the refuge of life. Kamandaka goes so far as to say that if *Dandaniti* is out of gear the other three sciences would do harm to man, even if they could live at all.

It is well known that in the West there is a multitude of political theories about the origin of the State and of civil society. Among them may be mentioned the theory that force is the basis of the State, the theory of the divine right of kings, the theory of social contract, the theory that consent is the basis of the State, the organic theory of the State etc. All these theories and others as well have their counterparts in Hindu political theory and practice and I shall very briefly indicate and discuss them here.

It is glibly assumed that the theory of the divine right of kings—"the right divine of kings to govern wrong" as described by Pope--was the one which was fully accepted by the Hindu mind. There are, no doubt, hymns in the Rig Veda and the Atharva Veda justifying such a view. The Satapatha Brahmana identifies the king with God Indra. Manu and Mahabharata also say so. But we must not take literally the statement that the gods reside in the body of the king. All that it means is that if he is a good king, there is a special manifestation of the divine there. In fact, everything is divine but in diverse degrees. In Manu, Chapter VII, verses 6 and 7, it is said that a king dazzles the eyes like the sun, and has the characteristics of the other gods as well. This is stated in the Agni Purana. It is easy to pass from similarity to identity. Sukraniti emphasises the similarity rather than the identity. It says that kingship is due to *punya* and *tapas* in previous births (I, 39—40). Nay, it says that a good king is a part of the gods while a bad king is a part of the demons (I, 139—140). Professor P. N. Banerjea rightly says that "only a righteous king was regarded as divine." Even if a king is divine, Dharma is the king of kings. Thus the Hindu theory of the divine right of kings was not a whole hogger like the

European theory. In fact, there were instances of the abdication or exile or even destruction of bad kings.

The Hindu theory of social contract takes us to a higher plane. In this view the king is elected because he is a good and strong protector. The Aitareya Brahmana and the Satapatha Brahmana say that the gods elected and crowned Indra as their king. It is in the Mahabharata and later on in Kautilya's Artha Sastra that the theory of social contract is clearly adumbrated The story about king Prithu's agreement to receive taxes and give protection is symbolical of a development of political thought. It shows that the real source of the power of the government is the people. As the king's duty is to govern according to Dharma and as Dharma was the chart of life given by God, the divine element in rulership is the basis of government, but the mainspring of the rule is the consent of the people. Of course, there was no actual civil pact any more than there was any actual divinity of kings. It was Rousseau that put forward the theory in its most uncompromising form in the West. But the history of every country shows tribal life developing into kingship and contains no traces of any contract, actual or possible, between the king and the ruled. Rousseau's state of nature never existed as a fact. The theory of social contract reduces a slow organic process into a manufacture. Its only value is the emphasis which it lays on the fact that a government ultimately rests not on force but on will and that the real source of governmental authority is the consent of the governed.

It is true that as a counterpart to this theory the Hindu books on political science emphasise Danda or punishment. Manu says that God created Danda as the protector of all creatures. But this does not mean that force or punishment has an inherent value or is an end in itself. Force is only an instrument and a means of righteousness. It was modern Germany that worked out the theory of force as the basis of the State and as being an end in itself. The theory of force will only lead to tyranny unless we realised that it is but the servant of Dharma.

The organic theory of society alone gives equal importance to the parts and to the whole. Personal liberty is good but collective action is better. Mutual forbearance is admirable, but mutual aid is yet more admirable. Each functioning group contributes to the life of the whole and will die if detached from the whole. T. H. Green says well that each person finds his own good in the common good. Such common good includes not some individuals but all the individuals and implies the full development of the personality of every individual. The Hindu idea of a State being Saptanga (with seven limbs) and the Purusha Sookta hymn about the groups forming the head and arms and the thighs and the feet of Purusha are examples of the organic theory of the State. Sukraniti says that the king is the head, the minister is the eye, the ally is the ear, the treasury is the mouth, the army is the mind, the fort is the arm, and the territory is the feet. But we must not import the modern biological theory of an organism into the Hindu concept. In a biological organism the parts have no independent life or purpose but each human being, though he is a limb of the State, has a purposive life of his own, a portion of which is expressed in and through the political life, while the immortal aspect of it has a meaning and purpose and value that transcends the life of the State. Further, a cell or a limb of an organism can do only a particular kind of work, but an individual in a society can well have proper limits of variation, without being upset by unhealthy competition. There is little or no element of will in the structures and functions of an organism but individuals are self-propelled units and have voluntary choices in life. The social and economic and political relations are psychic rather than organic. In short a human being is essentially a soul.

Thus the Hindu concept of the State is not obsessed by this or that theory but is founded on the realities of human nature. Human fellowship and association and division of labour and diversification of structure and function are really due to the need for expressing the love-element which is the deepest principle in the rich complex of the

human personality and to the need for leisure which will be impossible without such means and which is necessary for the continuous flow of meditation on God which is the *sine qua non* of the realisation of God which is the *summum bonum* of life. It is, therefore, clear that the conception of the political obligation is the result of the Hindu view and vision of life. The purpose of the State was not merely the good life as the Greeks said or the efficient life as the moderns say, but was the godly life. In modern times some thinkers say that the promotion of the common good is the sole function of the State. The State Socialist would like to make the State interfere in every relation of life while the anarchist would like to abolish the State altogether. The State is neither a Leviathan nor an end in itself. It is a means — a great means to a greater end i. e., the realisation of God. In the language of the Mahabharata, Raja Dharma is the *Sadhana* of Moksha Dharma.

It follows, therefore, that the governmental function is to provide the means of a full life leading to a good life, leading to a godly life. Apastamba says that no one in the kingdom should suffer from hunger or heat or cold. Thus the government should ensure to each and all sufficient food and clothing and shelter which are the prime necessaries of life. But it is not enough to have a mere existence. Kalidasa says in his Raghuvamsa that the king was the real father of the people because he provided universal education and universal employment and universal justice. No one wants doles but every one wants to make a living by doing congenial work and by being fitted by education to do such work well in the interests of all. The State should maintain Dharma not for its sake but because Dharma leads to Divinity. It is through the Society and the State that we realise our higher individuality and rise above our lower self, but such higher self must eventually reach and attain and enjoy the Supreme Self. Raja Dharma leads to the realisation of the common good and eventually leads to the realisation of the Supreme Good. Man must realise himself as a social being so that he may realise himself as a spiritual being.

The real defect in the ancient concept of the State and of political obligation was that there was a tendency to idealise individual Dharma (Swadharma) and not to emphasise the common Dharma and to make all the people realise the need for a co-operative endeavour to resist external aggression and internal fissiparousness. In an age of military conscription and national armies and scientific advance and mechanised warfare, India also has to mobilise all her strength unless and until the commonsense of all nations disarms the nations and arms the League of Nations. We must also realise that we have moved away from the monarchic ideal and the aristocratic ideal to the democratic ideal. We know the value of representative government and of the press. We cannot get on in the modern age with kings aided by subservient ministers and advised by yet more subservient Sabhas and Samitis. But we must preserve the best elements in the fundamental political concepts and insitutions in ancient India. The ancient Indian concept of life and of political life as a branch of life and as a *sadhana* of super-life is even now unsurpassed. Further, the utilisation of the group life of guilds and professional associations is the best means of synthesising the State and the individual. Where such functional groups do not stand between the State and the individual, the State has a tendency to restrict individual liberty and take the entire ordering of life into its own hands. Another vital element in the ancient political concept was the concept of an autonomous village. It is necessary to harmonise local autonomy and central strength. This has not yet been done in every modern State. It is only when we realise the complex nexus of Swadharma of individuals and of the functional groups and of the State as a whole that we can harmonise centralisation and decentralisation and make the good life an open door to a godly life. The true political life is a wise federation of individual life and group life and national life. It is wrong to call it a pluralism or a monism. It is a federalism or a co-operative endeavour of all to enable each to release the higher self from the grip of the lower self.

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Education of Children

BY Miss PADMAVATHI CHINNAPPA

ARISTOTLE said in his famous exordium, "Every art is thought to aim at some good". Education is an art. Many people might ask the aim and purpose of education. There are so many ways of explaining it. One might say, education is to form character; another might hold it to be preparation of mind in a sound body.

In the past, people used to think that we were ushered into the world with minds empty, as our bodies were naked. Just as our bodies are clothed by other hands, so our spirits are furnished with what enters into them from other spirits. Others said that human brains were like a blank paper and it was the duty of the teachers and parents to fill up that paper. Anyhow that age has passed. Madame Montessorie was the first educationist who realised the worth of a child. She gave hope and confidence to the neglected little citizen. When we go to see a procession or a festival, it is an inborn tendency in us to lift children on our shoulders, so that they might be able to enjoy the scene; but in our daily life we neglect them and ignore their self-respect and individuality. Madame Montessorie has helped us to feel that a child has the same feeling, the same intelligence and identical instincts as we adults have. Her educational system for the neglected citizens brought revolutionary

changes in the western world. Many other educationists worked after her; although they differed from her in systems, all of them emphasised the individuality and the personality of the child.

Now, people in Europe have learnt how to respect their children. Psychology has rendered valuable services in this respect. In America educational psychology, industrial psychology and practical psychology play a great part in one's career.

It is amazing to notice the recent changes in the educational field in England. Especially in a big city like London, the educationists are experimenting with all sorts of new methods.

In an Indian teacher's training school, students are taught organisation, discipline, general principles and methods of teaching. It is a pity we do not have separate Colleges for Elementary and High School teachers. This is a great drawback indeed! The children of the Primary Schools are very different from the students of a Secondary School. In England there are separate Colleges. An Elementary School teacher has to take the School Leaving Certificate and then he undergoes two years' training in an Elementary School Teachers' College. A Secondary School Teacher has to be a Graduate and then he takes one year's training in College. So it is not possible for a teacher in an Elementary School to teach in a Secondary School. The teachers in England had to be very efficient.

In England a child usually starts his school eareer at the age of five. He comes under the care of the local educational authority up to the age of fifteen. From the last fifteen years there has been a big movement for Nursery Schools. These schools still do not come under any Education Act. That means they are not compulsory but are still obligatory. In urban districts the local authorities are introducing these schools, as there is a great demand for these schools. So in big cities and towns there are Nursery Schools for children from the age of three to five. There is a kindergarten department in every Elementary

School. They usually have a head teacher and two assistants in that department. These teachers usually are qualified in that line. They usually apply play-way in education. The child learns his lessons in a playful mood. Then children go to the upper classes. Here they are taught everything properly.

With regard to the school syllabus, the English children more or less have the same subjects as Indian children have. The difference lies in the efficiency of the teachers. The teachers are better informed and better trained than teachers in India. The English child has a wider and deeper knowledge than our School children have. Those children are taught to use their power of observation, which is very important in a student's life. Children there do not find their subjects boring. I was in a Training College in London for some time. There we were asked to teach subjects according to the mind of children and time of the day. For instance it was stressed that subjects like mathematics, and science should be taught in the morning because children usually feel fresh in the morning. There is to be a break after every 45 minutes. Again this time-limit varies with the age of children. Little children do not have more than 30 minutes class at one sitting. Children are taught interesting subjects in the afternoon, as children usually find difficult to concentrate on heavy work.

We have not in India separate schools for mental defectives. This is one of the valuable services the psychologists have rendered us. These defective children are graded according to the intelligence and are sent to institutions. The educational authorities are trying to introduce intelligence tests in schools. Cysil Burt has done a great deal of work in education. His scholastic tests are applied in many schools. And they have been a great help in finding out the abilities and capacities of children. The work of the Institute of Industrial Psychology has been very useful in the direction of vocational guidance. They advice the school-leaving children as regards their future occupation.

We have to understand our children. Our teachers ought to understand their children psychologically.

English is the mother-tongue of the English children and it is the medium through which they express themselves. Human lives, like works of art, must be judged by their "expressiveness". They read and think and learn in their own language, but we have to learn many subjects in a foreign tongue. I hope we shall be able to learn our lessons in our own language. Then alone we would be able to express ourselves properly. We hope that our present Government will render some service in this respect. We hope to have satisfactory arrangements in our schools and then our children's future would be assured.

Hindi in Schools.

By A. RAMA IYER, M. A.

THE opposition to the Madras Government's move to introduce Hindi as a compulsory subject of study in the first three Forms in all schools seems to be confined to the Tamil country. It cannot surely be contended that Tamilians are greater lovers of their mother-tongue than the people of Andhra, Karnatak and Kerala are of theirs. Those who raise the cry of 'Tamil in danger' seem to be actuated more by hatred of Hindi than by a passion for Tamil; for, significantly enough, none of them have raised their voice against English, which is surely the one language that has stood in the way of the mother-tongue finding its legitimate place in the curriculum. The fact is, the present anti-Hindi agitation in Tamil Nad is mostly a factitious one; and where it is genuine, it is but a part of the misguided attempt to keep Tamil free from all contact with other languages, —especially, with Sanskrit and allied languages. In either case, it is impossible to argue with its sponsors!

I am not impressed by the plea that Hindi may be taught as an optional, but not as a compulsory, subject. If English can be a compulsory subject, why not Hindi? If it is to be optional, what is it to be an alternative to? At present, Sanskrit is taught as an alternative to the mother-tongue, which is obviously indefensible, seeing that the mother-tongue must, in any rational system of education, find the first place and not be regarded as a substitute for even Sanskrit. It would be even worse to make the mother-tongue an alternative to Hindi. If Hindi is taught at all, it must be taught for its own sake. If it is to be taught on the ground that every South Indian child at school ought to learn the all-India language, it must unquestionably be taught to all pupils. Let us not also forget, in this connection, that the standard of attainment in Hindi to be aimed at is by no means high; it is only a *working knowledge* of the language that is proposed to be given in the first three Forms.

As a lover of Hindi and as one who has taken an active part in the Hindi Prachar movement in our province, I am all in favour of Hindi being made a compulsory subject of study in schools. I believe at the same time that, if Hindi as a compulsory subject of study is to prove a success, the following conditions have to be fulfilled.

The mother-tongue should be the medium of instruction and examination right up to the end of the High School course. There can be no difficulty at all about this. I do not, in this matter, share the scepticism of many of my fellow-teachers. Even now there are good text-books available in our language for the whole High School course; and when the mother-tongue becomes the medium of instruction, there will, of course, be an improvement in the supply of text books. But, since the text-books for the higher classes are in most cases likely to be mere translations or adaptations of English books, it may be preferable to use the English books themselves as text books in the highest classes, the medium of instruction and examination still remaining the mother-tongue. This may sound a strange suggestion, but I am convinced there can be no serious objection to it, if the pupils have been taught to read English books with facility. It ought to be possible for our pupils in the highest classes of the High School to read English text-books and understand them without difficulty, provided they have not to reproduce the matter in English.

The mother-tongue should be the only language taught at the primary stage. What happens at present is that English is introduced at too early a stage,—in the third or or the fourth standard—before the pupils have had a firm grounding in their mother-tongue. The result is that so much time which should legitimatly be given to the mother-tongue is given over to English, and there is no chance of the mother-tongue being mastered ever afterwards as a medium of correct and elegant expression. Another serious fault is that, under the pernicious influence of the 'Pandit-tradition', the mother-tongue is never taught as a modern language. Particularly is this the case with Tamil. Classical Tamil is indeed, admirable on account of the literature enshrined

in it, but what is the fun of our seeking to teach it to immature children who have not yet learnt to use modern Tamil? It is no less absurd than trying to teach Anglo-Saxon or Chaucer to those who have not learnt modern English! It is a pity we have not yet outgrown the crude notion that a mastery of the mother-tongue will come of its own accord, without systematic training. Why can we not learn a lesson from the numerous attempts at improving the teaching of English to English children? We still seem to think that 'composition' means 'composition in *English*'. The specimens of English composition that we come across in our schools are so pitifully incompetent, mainly because the principles of composition are not taught in the mother-tongue in the first instance.

English should be taught only after the Primary stage. (I should like it to be postponed still further, but I am willing to let it be taught from the first Form) *by teachers specially trained to teach it.* The technique of foreign-language-teaching is a difficult and complicated one, and the foundations of a foreign language like English can be soundly laid only by teachers who have a mastery of the technique of its teaching as well as mastery of the language itself. Judged by this standard, we cannot deny that a good proportion of our teachers of English today are thoroughly incompetent, and so long as they continue to be in charge of the teaching of English, it is useless to look for better results. With improved methods of teaching as well as a better class of teachers, the standard of English can, I have no doubt, be appreciably improved. I do not therefore agree with the view that has often been expressed that vernacularization must necessarily involve a lowering of the standard in English.

Once the mother-tongue has found its due place in the curriculum and English has been deprived of its artificial importance, it ought to be easy to find room for Hindi in the curriculum of the first three Forms, without any extra burden on the pupils, especially since we shall be satisfied with a 'working knowledge' of Hindi. But let us be clear about it that elementary knowledge does *not* mean slipshod

knowledge—a distinction often lost sight of. *The three-year-course in Hindi should be a complete course including speaking, reading and writing; and conversation should receive special attention.* Text-books of an improved type should be got ready for this purpose. There should be a graded series of books—books for extensive reading as well as intensive study,—based on a carefully selected and controlled vocabulary, so that the maximum of reading, speaking, and writing power may be acquired during the three years of the course. Where a thorough grounding has been given in the mother-tongue, it ought not to be difficult to reach in three years a respectable standard of proficiency in Hindi.

We want really competent teachers for Hindi quite as much as we want them for English. I refuse to admit that anyone who has passed the Rashtra Bhasha Visharad examinatton of the Hindi Prachar Sabha or the Vidwan examination of the Madras University is *ipso facto* competent to teach Hindi. I know only too well how incompetent such persons can often be. We want a body of teachers who have been carefully trained for teaching Hindi to South Indian children, to whom after all it is a new language, though in vocabulary and in syntax there is so much of affinity between Hindi and any of the Dravidian languages that it is not a *foreign* language for us in the sense in which English is. As competent teachers cannot be had all at once, it would defeat our purpose to try to start teaching Hindi in all schools at the same time. The ideal thing would be for every teacher in a school to have learnt Hindi sufficiently well to teach it; but, under present conditions, this may seem a counsel of perfection. In any case, if the teachers of a school are all ignorant of Hindi and indifferent to it, and if Hindi comes to be regarded as the sole concern of the Hindi Pandit of the school, the pupils who have learnt Hindi only for three years are bound to lapse into illiteracy (so far as Hindi is concerned) in a year or two. If, on the other hand, all teachers of a school are able to read Hindi and speak it, such a calamity cannot happen, because all the teachers

can help to create a sort of atmosphere for Hindi in each school. So it seems to me that, if the Government are in earnest about Hindi, they make it obligatory on every teacher to have acquired a working knowledge of Hindi. The Government should also, in collaboration with the Hindi Prachar Sabha, take steps forthwith to train young men to become teachers of Hindi, so that it may be possible to introduce Hindi into the schools with the least possible delay.

No one would rejoice more than myself if Hindi should become a compulsory subject of study in our schools, but I am afraid the study of Hindi may become a veritable farce if the conditions I have briefly explained above are overlooked. If Hindi is to be merely tacked on as an additional subject to the present curriculum, without a radical change in the methods of language-teaching, it is bound to be felt an intolerable burden, and the whole thing is bound to end in an utter fiasco.

Scenes from Mughal Court Life

BY V. RANGACHARYA, M. A

The Coronation. The chief symbol of Mughal Sovereignty was the ceremony of enthronement or coronation, which was, comparatively speaking, very simple. It simply took the form of the emperor's occupying the throne and announcing it by issuing a new type of coinage and by the inclusion of his name in the *khutba*. But there were in the Mughal days a number of processions and pageantries both before and after this simple ceremony. The enthronement was generally heralded by a procession along the main street of Delhi, the emperor being seated on a golden *howda* on an elephant, and throwing handfuls of gold and silver coins amongst the crowd. There were then interviews in the halls of public and private audiences, during which the nobles paid contributions which were usually given away in charity as it was believed that such distribution would avert evils from the emperor. In the days of Shahjahan, the *Diwan-i-am* was the place where the throne was generally placed for the enthronement. It was a hall designed and decorated for the fine function. The throne was in the form of a peacock, and under a costly canopy, surrounded by jewelled umbrellas, couches and benches of gold on which the imperial arms were arranged. Elaborate arrangements were made for the accommmodation of the different classes of people both in and outside the hall. The emperor first mounted on the throne at an auspicious moment fixed by the astrologers and indicated by the water-clocks and sand-glasses which were then in vogue. The occupation of the throne was signalled by the play of the imperial band, and by the proclamation from a high *nimbar* (rostrum) of the new emperor's name and titles, which was accompanied by praises to God and the Prophet, and by the enumeration of the names of the previous emperors, on the utterance of each of which the new occupant received robes of honour. On the mention of his own name, a cloth of gold and cash were presented.

Pearls, gems and coins were then showered among the courtiers, which they eagerly seized as tokens of luck; and they did formal homage by raising their hands to their forehead and by exclaming 'Long live the Khalif of the age.' The emperor rewarded them with *khilats* (robes of honour). Scents were sprinkled, betels distributed, and the very atmosphere was made heavenly fragrant. The fact of the royal accession was then formally communicated to the provinces and cities.

The newly-installed monarch used then to hold a court in the harem, in which princesses and noble ladies offered jewels and other tributes, receiving rich presents in return. It was usual for the emperor to give large sums on the occasion to his children and dependants. Aurangzeb, for instance, granted his favourite sister five lakhs of rupees and his four daughters sums ranging from four to a lakh and a half. The emperor would then adjourn to the public court, and give audience to a select set of princes, nobles, officers, scholars and poets, and bestow gifts upon them. Poets were rewarded for the best chronograms expressing the date of the accession.

One important event in the coronation was the announcement of the imperial policy. Jahangir, Shahjahan and Aurangzeb gave several 'coronation boons', besides making declarations of their secular and spiritual policies on the occasion.

The coronation festivities lasted for several days after the day of formal accession. The emperor received the *peshkas* from vassal chiefs during this period, and in return made presents to them. Fireworks and illuminations for several nights made the imperial headquarters a scene of riotous joys and festivities, in which all classes of people took part.

The Emperor's Prerogatives and Paraphernalias. The Mughal emperor was distinguished from his subjects by the possession of certain prerogatives and paraphernalias which could not be wielded by private people. In the first place, he had the right to *chauki*, the guard and salutation of troops. Akbar divided the troops into 28 sections

for this purpose, each of which was bound to keep watch over the palace for a day. In the evening, the imperial standard was taken to the public audience, and formally saluted, the commander in charge being supplied with dishes from the palace. Another royal privilege was the right to receive the three methods of salutation, the *kornish*, the *Sijdah*, and the *taslim*. In the *kornish* the subject placed the palm of his right hand on his forehead, and then bent his head downward. In the *taslim* the saluter had to place the back of the right palm on the ground, then raise it gently till he stood erect, and then put the palm of his hand on the crown of his head. Both these modes, we are told, had an interesting origin. Humayun was once presented by Akbar with one of his own caps. The prince put it on, but as it was too large, he had to hold it with his right hand when bending his head. The padshah regarded this to be so beautiful that he ordered it to be the chief mode of salutation by his courtiers. The *kornish* or *taslim* had to be done thrice on special occasions like presentation to the emperor, taking leave of him, and the receipt of a Mansab, jaghir, dress of honour, elephant, horse, etc; but on ordinary occasions it had to be done once.

The third kind of salutation, the *Sijdah*, was complete prostration. As it was disliked by the Muslims, Akbar encouraged it only in the case of his disciples, or in private interviews. A section of the Hindus, the Darsaniyas, performed this prostration, even though the emperor was a Muslim, on the ground that they could not mess before seeing the ruling monarch whoever he was. Aurangzeb abolished it on the ground that it was blasphemous.

Another mark of imperial dignity was the right to the attendance of musicians. Akbar met them at 8 o'clock and during darbars. They were arranged in seven divisions, one for each day of the week. In 1667, Aurangzeb dismissed the court musicians except the royal band (Naubhat) on pension, as the Koran prohibited music. The kettle-drums could be played only to the emperor, unless he gave the privilege to any men. No nobleman could carry

his flag (*alam*) or beat his drum in the imperial capital. Jahangir, in whom a beatific smile and fiendish criminality alternated with perplexing suddenness, used to order the nobles who broke this rule to be promptly put to death.

Among the other privileges of the emperor may be mentioned the right to grant titles; to make officers walk on foot as part of the retinue; to use the *palki* when going to the mosque; to fix seals (*punja* or vermilion impression of the palm) to communications; to be praised by high-sounding panegyrics; to sentence a man to mutilation: to forcibly convert people; to order elephant-fights and the lion-chase; to occupy a higher seat than half the human stature; and to have himself weighed against precious metals.

Court Etiquette. The Mugal court was singularly particular in regard to etiquette. There were very minute rules regarding standing, sitting, saluting, and other actions in the court, the breach of which was punished in a manner the horror of which it is difficult to contemplate or realise. Akbar's regulations were in vogue throughout the Mughal period. The rivalry among the nobles for the observance of the court conventions often led to unpleasant incidents. The nobles had definite places and ranks in the *darbar*. A nobleman who came to the imperial court was escorted in set methods, from set distances, by set officers. The Darbar was railed off into divisions. The most prominent nobles and favourites alone, those who represented the flower of what the empire had of the best and noblest, were permitted to go into the innermost enclosure which had red or golden rails, and which was three steps higher than the rest of the Darbar hall. The next grades of nobles were in the second enclosure, and the common courtiers in the last. Each railed area had many doors guarded by men with white rods in their hands. The platform on which the emperor was seated had before it a number of hangmen with caps and hatchets,—there were also whippers ready by their side,—to symbolise the theory that the emperor was a bloodhound on the track of wicked people. When a grandee was taken to the Darbar,

he had to salute thrice, and then kneel at the entrance to the outer rail. Just in front of the emperor's seat he had to do the same thing again, and a third time within the red rail. The emperor used to show his regard by embracing him, and then entrusting him to a special officer who assigned him a place in accordance with his rank. None could sit in the darbar, except ambassadors and those who were specially permitted,—an expression of the sardonic vanity of man and the little regard paid to the dignity of human nature.

A singular attention was thus paid to decorum in the Mughal court; but occasionally we come across scenes of horror in breach of it. Once, in the court of Shahjahan, the Rajput chief, Amar Singh of Marwar, was asked by the Wazir Salabhat Khan why he had not attended the court, and abused for his silence. The proud chief, stung by the words of insult, immediately struck him dead in the royal presence. Shahjahan promptly rose, and went away, after silently signalling for his immediate death. Six men fell on the chief and killed him. We know how the test to which Sivaji was subjected took him to the breaking-point, and plunged him once again into the stormy waters of undying warfare.

Rivalry among the nobles. Often, there was bloodshed in the quarrel for the proper place in state functions and processions. Once General Bahadur Khan*, the favourite and foster-brother of Aurangzeb, who had a high pride and rare boldness of speech, displeased Aurangzeb, and he, with a view to teach him a lesson, ordered his palanquin to be placed behind that of Asad Khan, the first minister. Warned of this, Bahadur did not only refuse to attend in person, but sent some men in his place with instructions to offer opposition in case the report was true. It did happen as rumour had said, and the two parties came to an unseemly scuffle, and the emperor himself had to intervene. He proceeded even further in his condescension. He paid the General a visit, assured him (falsely) of his ignorance of the cause of dispute, and soothened his

* Vide Manucci, Vol. III., pp. 421 - 2.

wounded feeling by promising the prevention of similar incidents in future.

Royal processions. The Mughal court was very fond of processions and pageants. Every important state occasion was utilized for the purpose. The emperor was attended by a retinue on such occasions, the splendour of which can hardly be realised. Gold and silver pieces were usually scattered over the emperor's head before the assembled crowds. The exteriors of palaces, courtyards, and other august edifices were decorated in masses of entrancing colour. The walls and colonnades, the balconies and open spaces, were adorned gaily with gorgeous carpets, shawls of red from Kashmir, velvet brocades, and hangings got from Turkey or China. The diamonds and gems on the emperor's person and those of the attendants shot flames on their turning this side and that. A stately and magnificent bustle reigned over the paths of the royal movement, and the world seemed to be a nursery stored with toys for gratifying the emperor. Our present-day imagination can but dimly realise the dramatic and spectacular heaven eloquently described by the eye-witnesses of the period. Everything was grand and polished about the great Mughal; but there was almost always a skeleton in the cupboard, and the gleam of even the most powerful emperor's happiness was too often clouded by torturing memories or grim presentiments.

Court Amusements. The Mughal court was often a gigantic scene of amusements and festivals. Wrestling and boxing were very common, and the court maintained an immense staff of professionals who frequently engaged in contests. Elephant fights, which were very dangerous, were very common. Akbar employed even mad elephants for the purpose. Once, when engaged in the reduction of a local fort, Akbar visited the scene in disguise, ordered a courageous elephant upon which he was mounted to batter in the gate. The real elephant-driver admired his courage, and asked him what his name was, so that he might report about his skill to the emperor. The disguised soldier asked him in return what the elephant's name was,

and, when he came to understand that its name was *Active*, the pretended driver suggested that a better name would be *the breaker of gate-ways*; and next day, during the elephant parade, a reward came to the driver, thus making him understand that the king was the hero of the episode. Akbar enjoyed elephant-fights, and often took part in them. His successors showed equal courage. Both Jahangir and Shahjahan were fond of it. Even Aurangzeb distinguished himself in it. Once, when he was a prince, one of two fighting elephants charged him while he was attending the performance on horseback. He awaited the attack with wonderful coolness, and then struck the forehead of the elephant with his spear. The infuriated beast attacked and threw down the horse upon which the prince was riding, and the latter too would have been killed but for the rescue by the rival elephant. Abdul Hamid, the chronicler of Shahjahan, who gives a vivid account of the incident, says that it caused a sensation and became a favourite theme with poets. One of the poems was composed by Abu Talib, a Persian, who had come to the court; and a manuscript copy of it is said to be available at Aligarh and elsewhere. The incident was also a theme for painters. A picture of it is in the Delhi Museum, and another of the later Kangra school is in the Lahore Museum.

In the days of the Mughal decline elephant-fight fell into disuse, though Jahandar Shah held one at Delhi in 1713. The Nawabs of Oudh later on revived the custom. Bishop Heber says that, during his visit to Lucknow, he was offered the compliment, usually offered to a great officer in those days, namely, the organization of an elephant-fight; but the worthy Bishop declined it on account of the desire not to appear more cruel than the Mullas who condemned the sport. In a book called *The Europeans in India* which appeared in 1813, there is a picture of the Marquis of Wellesley and his suite, then at the breakfast table of the Nawab of Oudh, enjoying themselves by witnessing an elephant-fight.

It was but natural that in an age when elephant-fighting was common the profession of the elephant-driver was

highly lucrative. The post was often one of influence as a clever driver could gain the attention of the emperor himself. But it was also one of great danger. Manucci[1] says that many elephant-drivers lost their lives in the amusement, and so their wives used, when their husbands mounted the elephants for a combat, to break their bracelets and remove their jewels as a sign that they were widows. On the other hand, an elephant-driver's enemy had often a bad time; for the latter used to infuriate the elephants by drugs and make them attack those whom he feared or hated. In this way, not often, shops were destroyed by elephants after their parade in the palace. In the reign of Aurangzeb the scandal became unbearable, and the emperor made it compulsory for every mahout to enter into an agreement that he would lose his own life if his elephant caused any deaths, and that he would recoup any loss inflicted on others by him. The number of untoward incidents then fell; but there were, often enough, natural cases of mad elephants doing considerable havoc to person and property.

The historian Shekh Nurul Haq describes an ingenious indoor exhibition made by one Sayyid Hasan Shirazi for the amusement of Akbar.

The man "placed a chest before him, and when any one gave him a rupee, he threw it into the *chest*, and it kept on rolling until it fell into the lowest compartment. Upon this, a parrot which was chained to it began to speak, and two fowls began also to cackle at one another. Then a small window opened, at which a panther put out its head, and let a shell fall from its mouth into a dish which was placed on a lion's head, and the shell then came out of the lion's mouth. A short time elapsed, when another door opened and another lion came forth, took the shell in its mouth and retired, and the doors again closed. Two elephants then appeared with perfect trunks, and there were also two figures of men, who sounded trumpets. A rope then thrust itself forward, and again retreated of its own accord. Two other men then advanced, and made obeisance. Shortly after, another door opened, and a puppet came forth with an ode of Hafiz in its hand, and when the ode was taken away from the puppet, it

1. See Manucci, Vol 11, p. 19 for a story of Shahjahan's chief elephant.

retired, and the door was closed. In short, whenever a piece of money was placed in the hands of Hasan Shirazi, all these marvels were exhibited."

The emperor, continues the historian, showed his appreciation of the ingenuity of the Sayyid by giving him a gold *Mohar* with his own hand and by ordering his attendants to give a rupee each. This exhibition lasted for several nights.

Pigeon flying. Another very common amusement of the Mughal prince was pigeon-flying. It was inherited from their ancestors. Manucci says:

"The Mahomedans are very keen on breeding pigeons in large numbers. They make them fly all together, calling out, whistling and waving with a cloth fastened at the end of a stick, running and making signals from the terraced roof, with a view to encouraging the pigeons to attack the flock of some one else. In this way the flocks are so trained that they fight in the air. Then, when the owners whistle and make the signs above described, the pigeons assemble and fly away to their homes, except a few who, losing their way in the confusion, allow themselves in their innocence to be carried off along with their adversaries. It is for this end that they fly these flocks; and over and over again they send them out and win more pigeons. Every owner is overjoyed at seeing his own pigeons, the most dexterous in misleading their opponents." (Vol. 1. pp. 107—8.).

The Chase: The most important of the outdoor engagements of the Mughal emperors was the chase. Abul Fazl says that Akbar was very fond of it, not for the pleasure it afforded but its utility. Jahanghir used to spend two months every year upon it. Hawkins says that, when coming out from the palace, if he got upon a horse it was a sign that he went for war, and that if he got into a palanquin or rode an elephant, it was understood that he was going on an excursion. Other European travellers like Bernier and Manucci give interesting details of the Mughal hunting parties. The hunting of lions, an extremely perilous pursuit, was reserved for royalty, and others could engage it only with the royal permission. Bernier gives this description of the method of capturing a lion.

"As a preliminary step an ass is tied near the spot where the game keepers have ascertained the lion retires. The wretched animal is soon devoured, and in this way they contrive during several days to allure the lion and attach him to one place; and when information is received of the King's approach, they fasten at the spot an ass where so many others have been sacrificed, down whose throats a large quantity of opium has been forced. This last meal is of course intended to produce a soporific effect upon the lion. The next operation is to spread by means of the peasantry of the adjacent villages large nets made on purpose, which are gradually drawn close. Everything being in this state of preparation, the king appears on an elephant protected in places with thin plates of iron. He immediately approaches the net on the outside and aims at the lion with a large musketoon. The wounded animal makes a spring at the elephant according to the invariable practice of lions, but it is arrested by the net; and the king continues to discharge his musketoon until the lion is at length killed". These precautions and preparations, however, were not always arranged; and the Mughul emperors and princes showed rare courage and presence of mind. We are told that once a lion descended from the mountains and laid parts of the country waste. Aurangzeb ordered his son Muazzim to go on a chase and kill the dangerous intruder. The master of the hunt then asked for the net arrangements, but the emperor ordered that the prince should go on the perilous job without such aids, adding that as a prince he had never thought of such precautions. The prince carried out the order, but at the expense of a few attendants.

Niccolo Manucci gives another version of the Mughal chase, in describing the exploits of Shahjahan who was a great tiger-hunter. A number of ferocious buffaloes with long horns were maintained for this purpose and trained by being made to fight with themselves or the tigers. A number of cows, asses, sheep and other animals were first sent into the woods in order to attract the tigers to their old haunts, and the whole forest was encircled by high nets with a single opening to permit the chasing party to enter. The hunting procession was first formed by an array of 100 buffaloes, each ridden over by a man armed with leather shields for the legs.

"The order in which the king moves is as follows: In front go the buffaloes, sometimes more than 100 in number all in a row. On each one is a man with his legs girded by leathern and having

a broadsword in one hand and holding with the other the reins which are passed through the buffalo's nostrils. Behind them comes the king on an elephant ; after the king the princes and the men in highest favour. When they go into the jungle where the tigers are, the buffaloes advance slowly in the formation of a half moon until the tigers are in sight. After locating the tiger by sight and smell, a circle is formed, leaving them in the centre. In this way the tigers finding themselves caught, search for an exit. Unable to get away, each one makes its spring in the direction it sees best.

The men would then jump off the buffaloes with agility and the furious beasts would then seize the tigers on their horns and gore them to pieces. Tigers which extricated themselves from the attack or which refused to leave their lairs were shot by the king and others. Sometimes, the chase was organised without the buffaloes, and it was then very dangerous. Once Shahjahan's elephant was desperately attacked by a wounded tiger. The mahout fell, but the king courageously clung to his seat, and struck it with the matchlock. Ultimately the elephant dashed the attacking beast against a tree; and hence the emperor ordered that the heads of the elephants should in future be protected by leather shields studded with nails. There was a special officer to extract the whiskers from the deceased tigers. "As soon as the tiger is dead they put on his head a leather bag, coming down as far as the neck. Having tied the bag, the official attaches to it his seal. After the tiger is carried in front of the entrance to the royal tents, the official appears who has charge of the poisons and removes the whiskers which are employed as venom." (Manucci I. p. 192).

Legends of The Irish Saints

ST. FLANNAN'S VICTORY

BY THE Rev. F. H. ALDHOUSE, M. A.

At dawning when distorting mists gloom grey
To golden haze they change when breaks the day.
The Greatest Alchemist transmuteth still
To joy and gladness every loss and ill.
Faith gives the strength by which I climb life's hill.

—*From the Celtic of St. Flannan.*

ST. Flannan was deep in meditation. His eyes saw nothing of the beauty of Loch Derg. Its dreaming dark waters, its deep blue sky filled with the midday glory of the sun, its wooded banks and emerald glades cast their wistful magic in vain. The Saint's mental sight was fixed on an inner vision of the Divine in this world. He saw it as a single point, of marvellous radiance, from which circles of white glory spread in concentric waves. These vibrating circulating rays sang as they entered into all existences. It was a song of creation, a canticle of miraculous beauty and joy. There were innumerable shadings in the brightness of the beams of the sacred Centre of things as they spread in unending shining circumferences. The caroling was the murmur of the waves, the dancing rustling of leaves, the warbling of every bird, the crocning of winds and waters; all harmonious sounds, and something above and beyond all that was there and yet was the link between each and the hidden sweetness in them all—the joy of the enternal working of God. The music of each new day "when the morning stars sang together and all the sons of God shouted for joy". St. Flannan felt his whole being irradiated with Light, his own heart singing in the melody. He knew the joy of ecstasy, that standing away from the limitations of one's lesser self and finding of the greater Self, the flight of the alone to the Alone.

Suddenly the vision of Unity was ended. Almost with a physical intensity of suffering he was snatched back from

Life to this lesser life. For a moment he did not realize what had ended his bliss. Then a shrill tittering laughter became dominant. The Saint looked wonderingly and sorrowfully at the mocker, a small hooded figure which was rocking with malicious merriment. "Brother", the Saint said "why do you call me down from contemplating heavenly things? And surely your mockery and ridicule are uncalled for. To behold the Divine Beauty is the greatest of all boons. Is it kind or right to deprive me of a joy so hardly won?" "Dreams and the foolish wanderings of imagination reduce a man to imbecility. Pardon, dear Flannan, my efforts to bring you out of a meaningless mooning down to common sense and a perception of reality. I fear you have hallucinated yourself to such an extent that you do not clearly know where your morbid fancies end and where facts begin" his companion replied. "I laugh because you ought to laugh, and do not do so, at your own aberrations." "I have been in the world of Truth" the Saint said "I have seen that the whole universe has its being in the divine Life. Do you call that nonsense, my brother? "Surely and certainly I do, Flannan. You only see what you wish to see and ignore all else. See that fox watching the rabbit hole. Ah, ah! he has pounced; listen to the squealing of his living dinner! That seagull rises from the loch with a squirming fish in its bill. All things around us, yourself included, Flannan, are growing older, the trees will turn to dead timber, the flowers will die. All living substances are but cellular matter on its way to become manure — or we will say fertilizer. It sounds better. Is that your divine Life, my friend?" "Who are you, brother?" the Saint demanded. "I am your companion, created by yourself, your own outcast reason. Rude people would, I belive, call me an imp." The small figure threw back its hood, It was a diminutive reproduction off the Saint himself, or rather a caricature of him, a small, sneering, wizen dwarf. "Ah, I was thinking so" the Saint sighed. "Your contempt, your disparagement of the workings of an evolving universe, your blindness to the final Perfection to which all things work! A pang, and lives

return to Life. As for myself, you speak of my growing old. Yes, I shall this night be one day nearer Him. My body will return to nature, so be it. But, brother imp, even now I can escape mortality by thinking, thinking till my thoughts touch His thought and in his Will is my Peace".

As St. Flannan said these words he noticed the monk-like imp had grown smaller. It was in a squeak it now addressed him. "Fool, old fool, you should eat drink and be merry, for to-morrow you die. It is late, still do it while you can, for the night comes." "My joy, is continuous. My trust in Him is perfect. My good is to do my Father's will" the Saint cries triumphantly. "Death is to His friends re-birth. You are a little evil shadow, you shall fade whelmed in His Light". With a minute but shrill ululation the imp was gone. And the Saint the stronger for its opposition went back to his cell singing cheerfully.

"The shadows show the sun is brightly shining.
Joy is the answer to all vain repining.
This I have seen, and this I surely know,
Unto Perfection shall creation grow.
Then welcome, welcome be all pain and loss.
By it I rise, a throne becomes the Cross
I drink your chalice, Lord, that I may be
Conformed unto your Life, eternally.
The bliss that I shall share some day with you
My griefs but magnify, as is most due."

Unshaken, unperturbed, unmoved the Saint returned to his contemplation of the Divine heart of things. He had vanquished his demon.

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NICHOLAS ROERICH

Nicholas Roerich to-day stands as one of the greatest voices of the century—an artist whose creative genius has been recorded in 4000 master-pieces of painting, of which 1000 are in the Roerich Museum of New York, a monument to his art and to his cultural leadership; and 3000 in the leading museums of 20 countries of the world. His achievement as archaeologist and scientist, as philosopher and as leader of the movement for international unity through culture are no less stupendous. His is a multi-faceted genius, constantly questioning, constantly evocative, undeviating from the goal of his existence—the greater brotherhood of mankind.

A torch-bearer of culture, Roerich in his mission has won acclamation from the outstanding personalities of the world—Einstein, Maeterlinck, Andreyeff, Zuloaga, Itsuzo Takeuchi, Rabindranath Tagore; and it is significant of the interest aroused by his personality that he has recently been the subject of several monographs in different languages.

Among contemporary masters, the work of Roerich seems to contain a universality of appeal, a hidden source of beauty which emerges at the call of each spirit projecting that ray of light summoned up by each spirit's own desire.

Roerich Halls dedicated to the paintings of the artist have been founded in Paris, Belgrade, Benares, Zagreb, Druges, Allahabad, Riga, Buenos-Aires, Kyoto and Prague. Roerich has established his permanent contact with India, by the foundation of the Urusvati Himalayan Research Institute, at Naggar, in the Kulu valley in the Punjab, where he has made his home. The Institute conducts scientific researches in the fields of archaeology, philology and the natural sciences connected with India and the Central Asiatic regions. Roerich ardently and deeply loves India, and venerates the ancient culture and wisdom of this great land, and time and again has spoken of these through his powerful writings. Roerich has the practicality, culture and tastes of a Westerner, the inflexible will-power of a Northerner and the contemplative soul of a poet, which makes him a close son of the East.

Roerich has painted long, long series of pictures embodying subjects taken from the past and the present, and even those uttering prophesies for the future, from the East and the West; but the remarkable series of paintings in which he has sought to lighten up the soul of the mighty Himalayas, will perhaps rank among his greatest contributions. No artist, past and present, has painted the lordly mountains in such glorious colours and panoramic variety.

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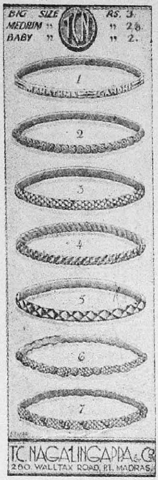

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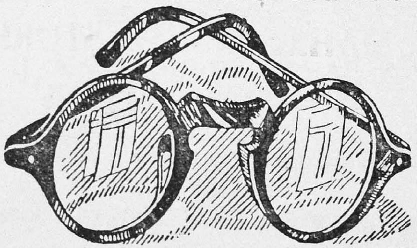

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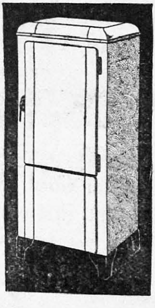

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